[B] Final Examinations of Algebra & Statistics

Some Schools Examinations on Algebra and Statistics

1 Cairo Governorate

St. Fatima Language School
Nasr City

Answer the following questions :

1 Complete each of the following :

(1) $(3\,a^2)^{-1} = \frac{1}{\ldots\ldots\ldots\ldots}$

(2) 0.75×10^8 in the standard form is .... × ....

(3) $-\sqrt{4^2} =$ ....

(4) If a die is thrown once then the probability of appearance number 3 on the upper face = ...

(5) The S.S. of the equation $X + 17 = 13$, $X \in \mathbb{N}$ is ....

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2 Choose the correct answer from the given once :

(1) The multiplicative inverse of $\sqrt{\frac{100}{25}}$ is ....

(a) $\pm \frac{10}{5}$ (b) $\pm \frac{5}{10}$ (c) $\frac{10}{5}$ (d) $\frac{5}{10}$

(2) The age of Amr now is X years , then his age 5 years ago is ....

(a) $5\,X$ (b) $X - 5$ (c) $5 - X$ (d) $X + 5$

(3) If $-X < 3$, then ....

(a) $X > 3$ (b) $X > -3$ (c) $X < 3$ (d) $X < -3$

(4) If a = b , then $\left(\frac{3}{7}\right)^{b-a}$ equal ....

(a) zero (b) 1 (c) $\frac{3}{7}$ (d) $\frac{7}{3}$

(5) The probability of the certain event equals ....

(a) zero (b) 1 (c) 2 (d) $\frac{1}{2}$

(6) ✻ The quarter of the number 4^{20} = ...

(a) 4^5 (b) 4^{10} (c) 4^{19} (d) 2^{10}

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3 [a] Simplify to the simplest form :

(1) $\frac{7^{-3} \times 7^5}{7^2}$ (2) $\left(\frac{1}{2}\right)^2 \times \left(\frac{-1}{2}\right)^3$

[b] Find in $\mathbb{Q}$ the S.S. of the following :

(1) $8 + 2\,X = 14$ (2) $3\,X - 1 \le 2\,X + 3$

4 **[a] Evaluate the numerical value of following expressions when t = 2 , a = 5 :**

(1) $\frac{a-t}{a^3}$ (2) $\frac{6^2}{a-1}$

[b] Simplify :

(1) $2-[(7-3)-2]$ (2) $\left(-\frac{1}{3}\right)^2+\sqrt{\frac{64}{81}}-\left(\frac{3}{7}\right)^0$

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5 **[a]** A box contains 5 white balls , 4 black balls and 7 red balls. A ball is drawn randomly from the box. **Calculate the probability of the following events :**

(1) The ball is white. (2) The ball is red.

(3) The ball is not white.

[b] If $\frac{m}{n}$ is a rational number , $\frac{m^2}{n^2}=\frac{16}{100}$ evaluate $\left(\frac{m}{n}\right)^3$

2 Cairo Governorate

Maadi Educational Zone
Sakkara Language School

Answer the following questions :

1 **Complete the following :**

(1) The probability of the impossible event = ...

(2) $25 \div (4+1) =$ ....

(3) If $3X+1=16$, then the value of $4X=$ ....

(4) $\sqrt{\frac{144}{169}} =$ ....

(5) $3^{zero} =$ ....

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2 **Choose the correct answer :**

(1) If $4X=20$, then $3X-1=$ ....

(a) 14 (b) 15 (c) 16 (d) 17

(2) A coin is tossed once , then probability of getting (Tail) = ...

(a) $\frac{1}{2}$ (b) $\frac{1}{6}$ (c) 1 (d) 0

(3) The probability of certain event = ...

(a) 0 (b) 1 (c) 2 (d) 3

(4) The S.S. of the inequality $X<0$ in $\mathbb{N}$ is ....

(a) $\{0\}$ (b) $\{1\}$ (c) $\{0, 1\}$ (d) $\varnothing$

(5) $\sqrt{X^8} =$ ....

(a) X^8 (b) X^5 (c) X^6 (d) X^4

(6) * If $x = y$, then $\left(\frac{1}{5}\right)^{x-y} = \dots\dots$

(a) $\frac{1}{5}$ (b) 1 (c) 5 (d) zero

3 [a] **Find S.S. in** $\mathbb{Q}$ **:** $3x + 1 \geq 2x + 5$

[b] A fair die is rolled once and observe the number on the upper face

Find the probability of getting :

(1) a prime number (2) a number less than 7

4 [a] **Find S.S. in** $\mathbb{Q}$ **:** $3x - 4 = 2x + 5$

[b] **Find :** $30 \div 6 \times 8 - (3 - 1)$

5 [a] * **Simplify to the simplest form :** $\left(\frac{9^3 \times 9}{9^5}\right)^{-3}$

[b] A bag contains 3 red balls, 4 green balls and 2 black balls.

Find the probability when the selected ball is :

(1) red. (2) green. (3) white.

3 Cairo Governorate

Nozha Directorate of Education
Nozha Language Schools - Ismailia Road

Answer the following questions :

1 Choose the correct answer :

(1) $3^5 \times 2^5 = \dots\dots$

(a) 5^{10} (b) 6^{10} (c) 6^5 (d) 6^{25}

(2) If $5x = 15$, then $2^x = \dots\dots$

(a) 2 (b) 8 (c) 3 (d) 9

(3) $\sqrt{\frac{25}{49}} = \dots\dots$

(a) $\frac{5}{7}$ (b) $\frac{-5}{7}$ (c) $\pm\frac{5}{7}$ (d) $\frac{7}{5}$

(4) A class contain 50 students, 40 of them are succeed in test, then the probability of failed is equal $\dots\dots$

(a) $\frac{4}{5}$ (b) $\frac{1}{5}$ (c) $\frac{5}{4}$ (d) $\frac{1}{10}$

(5) $3 \times 6 - 4 \div 2 = \dots\dots$

(a) 3 (b) 7 (c) 16 (d) 20

(6) * The multiplicative inverse of $\left(\frac{-3}{7}\right)^0 = \dots\dots$

(a) $\frac{3}{7}$ (b) $-\frac{7}{3}$ (c) 1 (d) -1

2 **Complete the following :**

(1) $\sqrt{9+16} = 3 + \ldots\ldots\ldots\ldots$

(2) If $-1 \leq -X < 3$, then $X \in \ldots\ldots\ldots\ldots$ in $\mathbb{N}$

(3) If the age of Omar now is X years , then his age after 3 years is .... years.

(4) If $2X = 5$, then $6X - 5 = \ldots\ldots\ldots\ldots$

(5) $(X-2)^{zero} = 1$ if $X \neq \ldots\ldots\ldots\ldots$

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3 **[a] Find in $\mathbb{Z}$ the solution set of :**

(1) $3X - 5 = 7$ (2) $2X - 3 \leq 5$

[b] ✻ Put the following expression in the simplest form : $\frac{(-X)^4 \times X^7}{(X^2)^3}$ where $X \neq 0$

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4 **[a] Calculate :**

(1) $\frac{(-3)^5 \times (-3)^4}{(-3)^7 \times (-3)}$ (2) $\frac{(5)^2 + (5)^4}{(5)^3}$

[b] If $X = \frac{1}{2}$, $y = \frac{-3}{2}$, $z = \frac{3}{4}$ **Find the value of :** $\left(\frac{X+y}{z}\right)^{-2}$

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5 **[a]** The sum of three consecutive even numbers is 60 , find them.

[b] A card is chosen randomly from ten cards numbered from 5 to 14

what is the probability that the chosen card is :

(1) An even number (2) A prime number

4 Giza Governorate

Inspection of Math

Answer the following questions :

1 **Choose the correct answer :**

(1) $\sqrt{\frac{4}{49}} = \ldots\ldots\ldots\ldots$

(a) $\frac{2}{7}$ (b) $\frac{3}{7}$ (c) $\frac{4}{49}$ (d) $\frac{1}{9}$

(2) $6 \times 2 - 4 \div 2 = \ldots\ldots\ldots\ldots$

(a) 1 (b) 2 (c) 10 (d) 12

(3) Which of the following is the probability of occurrence of an event ?

(a) -0.25 (b) 75% (c) 1.2 (d) 315%

(4) If $X + 9 = 11$, then $7X = \ldots\ldots\ldots\ldots$

(a) 2 (b) 9 (c) 11 (d) 14

(5) If the age of Ahmed now is X years , then his age 5 years ago is ....

(a) $X + 5$ (b) $X - 5$ (c) $X \div 5$ (d) $5X$

(6) ✻ $3^{10} + 3^{10} + 3^{10} =$ ....

(a) 3^{10} (b) 3^{30} (c) 9^{10} (d) 3^{11}

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2 **Complete each of the following :**

(1) The probability of the impossible event = ...

(2) The solution set of the inequality : $-X > -1$ in $\mathbb{N}$ is ....

(3) If the probability of success of a student is 0.7

, then the probability of his failure = ...

(4) If $2X = \sqrt{36}$, then $3X - 4 =$ ....

(5) If a coin is flipped once , then the probability of appearance a head equals ....

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3 [a] If $X = \frac{3}{4}$, $y = \frac{-3}{2}$ **, then find the numerical value of :** $\left(\frac{X}{y}\right)^2$

[b] **Simplify :** $\left(\frac{-3}{2}\right)^2 \times \sqrt{\frac{64}{9}} \times \left(\frac{2}{7}\right)^0$

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4 [a] If $X \in \mathbb{Q}$ **, find the S.S. of the following equation :** $3X - 1 = 14$

[b] What is the number which if we add it to its three times the result is 24 ?

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5 [a] If $X \in \mathbb{Q}$ **, find the S.S. of the following inequality :** $3X - 2 < 7$

[b] A fair die is rolled once **, calculate the probability of rolling :**

(1) An even number (2) A number greater than 2

5 Giza Governorate

6th October directorate

Om El Mo'mneen Language School

Answer the following questions :

1 **Complete each of the following :**

(1) If $2X + 7 = 3$, then $X =$ ....

(2) The probability of the impossible event = ...

(3) The standard form of 0.000057 = ...

(4) $\sqrt{(-8)^2 + 6^2} =$ ....

(5) The multiplicative inverse of the number $-\sqrt{\frac{9}{16}} =$ ....

2 **Choose the correct answer :**

(1) The S.S. of the inequality $x < 2$ in $\mathbb{N}$ is ....

(a) $\{0\}$ (b) $\{1\}$ (c) $\{1, 0\}$ (d) $\varnothing$

(2) $\left(\frac{2}{3}\right)^{-2} =$ ....

(a) $\frac{4}{9}$ (b) $\frac{9}{4}$ (c) $\frac{-2}{3}$ (d) $\frac{-3}{2}$

(3) $9 + 4 \times 3^2 =$ ....

(a) 45 (b) 117 (c) 24 (d) 33

(4) The age of Amr now is x years , then his age after 5 years is .... years.

(a) $x - 5$ (b) $x + 5$ (c) $x(x + 5)$ (d) $2x - 5$

(5) If the probability of success of a student is 75%

, then probability of his failure = ...

(a) 10% (b) 25% (c) 30% (d) 50%

(6) * Twice the number 2^{10} is ....

(a) 4^{10} (b) 2^{20} (c) 4^{20} (d) 2^{11}

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3 **[a] Find the S.S. in $\mathbb{Q}$:**

(1) $3(x + 2) = 12$ (2) $2x + 13 < 21$

[b] Find the result of the following in the standard form : $(4.4 \times 10^5) \div (2 \times 10^3)$

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4 [a] Two integers , the smaller one is $2x$ and the greater is $5x$, if the difference between them is 30 , find the two numbers.

[b] Find the value of the following : $\left(\frac{-2}{3}\right)^{\text{zero}} \times \sqrt{\frac{16}{81}} \times \frac{3}{4}$

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5 [a] If $x = \frac{3}{4}$, $y = \frac{1}{3}$ **, then find the value of :** $(x^2 y^2)^{-3}$

[b] A box contains of 6 red balls , 4 blue balls , 3 white balls. A ball is drawn randomly from the box.

Calculate the probability of :

(1) The drawn ball is white

(2) The drawn ball is not blue.

6 Alexandria Governorate

East Educational Zone
Mathematics Directing

Answer the following questions :

1 Complete each of the following :

(1) If $x + 5 = 1$, then the S.S. in $\mathbb{N}$ is ....

(2) The probability of the certain event = ...

(3) The side length of a square whose area is $49\,x^2$ cm^2 is .... cm.

(4) $\sqrt{(-5)^2}$ = ...

(5) A coin tossed 160 times , then an approximate expected number of the appearance of a head is ....

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2 Choose the correct answer :

(1) The multiplicative inverse of $\sqrt{\frac{4}{25}}$ in the simplest form is ....

(a) $\frac{25}{4}$ (b) $\sqrt{\frac{5}{2}}$ (c) $\frac{5}{2}$ (d) $\frac{2}{5}$

(2) $3^x + 3^x + 3^x$ = ...

(a) 3^{3x} (b) 3^{x+1} (c) 3^{x+3} (d) 9^{3x}

(3) If 2 a b = 10 , then ab = ...

(a) $\frac{2}{10}$ (b) 8 (c) 5 (d) 20

(4) A class has 25 boys and 20 girls. A pupil is selected randomly , then the probability that the pupil is a girl = ...

(a) $\frac{20}{25}$ (b) $\frac{25}{45}$ (c) $\frac{4}{9}$ (d) $\frac{5}{4}$

(5) $\sqrt{100-64} = 10 -$ ....

(a) 4 (b) 8 (c) 6 (d) 36

(6) ✻ If $x = -\frac{1}{2}$ and y = 3 , then x^y = ...

(a) $\frac{1}{8}$ (b) $-\frac{1}{8}$ (c) $\frac{1}{6}$ (d) $-\frac{1}{6}$

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3 [a] If $x = 3$ and y = 2 , **then find the numerical value of :** $16\,x \div (4\,y) + 3\,x\,y$

[b] A card selected randomly from ten cards numbered from 1 to 10

What is the probability that selected card shows :

(1) An odd number (2) A prime even number. (3) Non-prime number.

4 **Simplify to the simplest form :**

[a] $\frac{3^5 \times 3^{-2}}{3^3}$ [b] $\left(\frac{-5}{3}\right)^2 \times \left(\frac{-4}{9}\right)^0 \times \sqrt{3\frac{6}{25}}$

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5 **Find in $\mathbb{Q}$ the S.S. of the following :**

[a] $3X + 5 > 20$ [b] $2X + 8 = 13 - 5X$

7 Alexandria Governorate

El-Montazah Educational Zone
Math's Supervision

Answer the following questions :

1 **Complete the following :**

(1) The probability of the impossible event is ....

(2) If $X + 9 = 10$, then the value of $7X =$ ....

(3) ✻ If $0.0006 = 6 \times 10^n$, then n = ...

(4) The S.S. of the inequality : $2 < X \leq 4$ in $\mathbb{N}$ is ....

(5) If we subtract twice the number X from 3 , then the result is ....

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2 **Choose the correct answer :**

(1) The S.S of the equation : $X + 3 = 3$ in $\mathbb{Z}$ is ....

(a) $\varnothing$ (b) $\{0\}$ (c) $\{3\}$ (d) $\{6\}$

(2) $\frac{9}{20} =$ .... %

(a) 9 (b) 18 (c) 27 (d) 45

(3) A dic is thrown once , then the probability of appearance number 5 is ....

(a) – 11 (b) $\frac{1}{5}$ (c) 1 (d) $\frac{1}{6}$

(4) If a = 3 , b = – 2 , then the value of : 3 a b = ...

(a) zero (b) 18 (c) – 18 (d) 4

(5) If the probability of success of a student is $\frac{7}{10}$

, then the probability of failure is ....

(a) $\frac{3}{10}$ (b) $\frac{1}{10}$ (c) 1 (d) 0.7

(6) ✻ $2^7 \times 3^7 =$ ....

(a) 5^7 (b) 6^7 (c) 6^{14} (d) 6^{49}

3 **[a] Find in $\mathbb{Q}$ the S.S. of the following :** $3X + 3 = 8$

[b] Find the solution set of the following inequality : $4X + 7 \le 3$ in $\mathbb{Q}$

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4 **[a] ✻ Simplify :** $\left(\frac{9^3 \times 9}{9^5}\right)^{-3}$

[b] ✻ Write the result of each of the following in the standard form :

(1) $(3.8 \times 10^8) \div (1.9 \times 10^6)$ (2) $(3.8 \times 10^5) + (4.6 \times 10^4)$

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5 **[a]** Two natural numbers , one of them is twice the other and their sum 108

Find the two numbers.

[b] A fair die is rolled once. **Calculate the probability of rolling :**

(1) An even number. (2) A number greater than 2

8 El-Kalyoubia Governorate

Directorate of education
Inspection of Mathematics

Answer the following questions :

1 **Complete each of the following :**

(1) If $3X = 15$, then $2X + 1 =$ ....

(2) The multiplicative inverse of $7 =$ ....

(3) The standard form of the number 0.7×0.005 is ....

(4) When a fair die is tossed once , then the probability of getting an even number = ...

(5) 1 , 2 , 3 , 5 , 8 , ... , ... (In the same pattern)

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2 **Choose the correct answer :**

(1) The side length of a square whose surface area is $9X^2$ cm^2 is .... cm. where $X > 0$

(a) $3X$ (b) $3X^2$ (c) $9X$ (d) $9X^2$

(2) If $-X > 4$, then ....

(a) $X > -4$ (b) $X > 4$ (c) $X < -4$ (d) $X < 4$

(3) The sum of probabilities of all events of any random experiment is ....

(a) 0.5 (b) 0.3 (c) 0.2 (d) 1

(4) $\sqrt{100 - (-6)^2} =$ ....

(a) 4 (b) 8 (c) 2 (d) 16

(5) $2^7 \times 2^{-3} =$ ....

(a) 2^{10} (b) 2^4 (c) 2^{-4} (d) 8

(6) ∗ $2\frac{1}{4} = \left(\frac{3}{2}\right)^{\cdots\cdots\cdots}$

(a) 4 (b) 3 (c) 2 (d) 1

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3 [a] ABC is a triangle in which $(AB)^2 = 16\ cm^2$, $(BC)^2 = 25\ cm^2$ **Find :** BC – AB

[b] A coin is tossed twice , **find the probability of :**

(1) Getting 2 heads. (2) Getting one tail only.

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4 [a] **Find in $\mathbb{Q}$ the solution set of :**

(1) $5X + 8 = 13 - 2X$ (2) $X + 3 < 7$

[b] The probability of the absence of a student in one day = 0.15 , and the number of students in this school = 600 students. Find the number of present students in the school in this day.

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5 [a] Find the number that if added to its 3 times the result will be 28 ?

[b] ∗ **Find the value of :** $\frac{(-2)^5 \times 2^4}{(-2)^3 \times 2^2}$

9 El-Sharkia Governorate

Directorate of Education
Dep. of Governmental L. Schools

Answer the following questions :

1 **Complete each of the following :**

(1) If $X + 5 = 5$ in $\mathbb{Z}$, then the value of $4X = \cdots\cdots\cdots$

(2) The value of $\sqrt{(6)^2 + 64} = \cdots\cdots\cdots$

(3) When a coin is tossed once , then the probability of appearance of head is ………….

(4) If $-2X > 8$, then S.S. in $\mathbb{Z} = \cdots\cdots\cdots$

(5) The value of $2 \times 6 - 4 \div 2 = \cdots\cdots\cdots$

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2 **Choose the correct answer :**

(1) $\left(\frac{-2}{3}\right)^{-3} = \cdots\cdots\cdots$

(a) $\frac{-27}{8}$ (b) $\frac{-8}{27}$ (c) $\frac{8}{27}$ (d) $\frac{27}{8}$

(2) Which of the following may be probability of an event ………….

(a) – 0.25 (b) 87% (c) 1.05 (d) 130%

(3) If age of Ali now is $(X - 2)$ years , then his age 4 years ago is ………….

(a) $X - 4$ (b) $X + 4$ (c) $X + 2$ (d) $X - 6$

(4) The number which in the standard form between the following numbers is ....

(a) 11×10^8 (b) 9.7×10^{-5} (c) 10.3×10^{-3} (d) 0.87×10^8

(5) If $X = y$, then $\left(\frac{3}{5}\right)^{X - y} =$ ....

(a) 0 (b) 1 (c) $\frac{3}{5}$ (d) $\frac{5}{3}$

(6) The half of the number 2^{16} is ....

(a) 2^8 (b) 1^8 (c) 2^6 (d) 2^{15}

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3 **[a] Find S.S. of each of the following in $\mathbb{Q}$:**

(1) $3(X + 2) + 1 = 15$ (2) $5X + 4 \geq 3X + 20$

[b] Two natural numbers , one of them is twice the other and their sum is 108

Find the two numbers.

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4 **[a] Find the value of expression in simplest form :** $\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} + \left(\frac{3}{7}\right)^0$

[b] Find S.S. in $\mathbb{Q}$ of the inequality : $3X + 2 > -1$

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5 **[a] Find the value of :** $\frac{7^4 \times 7^{-2}}{7^3}$

[b] A box has 4 red balls , 7 white balls and 6 black balls. A ball is drawn randomly from the box. **Calculate the probability of the following :**

(1) The drawn ball is white. (2) The drawn ball is not red.

(3) The drawn ball is blue.

10 El-Dakahlia Governorate

Math's Supervision

Answer the following questions :

1 **Complete :**

(1) The S.S in $\mathbb{N}$ of $3X + 7 = 4$ is ....

(2) If the area of a circle 49π cm^2 , then the radius length = ... cm.

(3) If the probability of succeeded student is $\frac{4}{5}$, then the probability of failed is .... %

(4) If $2X + 3 = 15$, then $\frac{1}{3}X =$ ....

(5) $3X + 5 \geq 10$ where $X \in \mathbb{Q}$, then S.S. = ...

---

2 **Choose the correct answer :**

(1) If $\frac{6X}{5} = -2$, then $X^2 =$ ....

(a) $-\frac{25}{9}$ (b) $\frac{5}{9}$ (c) $\frac{25}{9}$ (d) $\frac{25}{3}$

(2) A die is thrown once and observed the upper face the probability of appearance number is divisible by 3 = ...

(a) $\frac{1}{4}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$

(3) $\sqrt{9} + \sqrt{4} = \sqrt{\dots\dots\dots}$

(a) 13 (b) 5 (c) 25 (d) $\sqrt{13}$

(4) If $\sqrt{\frac{a}{b}} = \frac{2}{3}$, then $\frac{b}{a}$ = ...

(a) $\frac{9}{4}$ (b) $\frac{3}{2}$ (c) $\frac{4}{9}$ (d) $\frac{2}{3}$

(5) If $-x < 3$, then ....

(a) $x > 3$ (b) $x < 3$ (c) $x < -3$ (d) $x > -3$

(6) ✻ $4^x + 4^x + 4^x + 4^x$ = ...

(a) 4^{x+4} (b) 4^{4x} (c) 4^{x+1} (d) $4x^4$

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3 **Find the S.S. of the following :**

[a] $5x - 2 = 2(x + 5)$, $x \in \mathbb{Q}$

[b] $3 - 2x \geq 1$, $x \in \mathbb{N}$

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4 **[a] Simplify :** $\left(-\frac{3}{7}\right)^0 \times \left(-\frac{2}{5}\right)^2 \times \sqrt{6\frac{1}{4}}$ (Show steps)

[b] If the length of rectangle 5 cm. more than its width and its perimeter = 26 cm. find the area of rectangle.

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5 **[a]** A box contains 15 cards numbered from 1 to 15 , A card is drawn randomly find the probability of :

(1) The drawn card carries a prime number

(2) The drawn card carries a number divisible by 3

(3) The drawn card carries a perfect square number

[b] If $\frac{x}{27} = \frac{3}{x}$ Find the value of x

11 Ismailia Governorate

Directorate of Education
El-Manar Language School

Answer the following questions :

1 **Choose the correct answer :**

(1) Which of the following may be the probability of an event ?

(a) 25 (b) 87% (c) 1.05 (d) 130%

(2) The S.S. of the inequality $2x + 1 \geq 0$ in $\mathbb{N}$ is ....

(a) $\mathbb{Z}_+$ (b) $\varnothing$ (c) $\mathbb{N}$ (d) $\{0\}$

(3) If $x = y$, then $5^{x-y} =$ ....

(a) 5 (b) 1 (c) 0 (d) -1

(4) If $\frac{6x}{5} = -2$, then $x^2 =$ ....

(a) $\frac{-25}{9}$ (b) $\frac{5}{9}$ (c) $\frac{25}{9}$ (d) $\frac{25}{3}$

(5) If $-x < 5$, then ....

(a) $x > 5$ (b) $x > -5$ (c) $x < 5$ (d) $x < -5$

(6) * $\frac{6a^2x^4}{2a^3x^3} =$ ....

(a) $3ax$ (b) $3a^5x^7$ (c) $\frac{3x}{a}$ (d) $\frac{3}{ax}$

2 **Complete each of the following :**

(1) If $x + 1 = 2$, then $2x =$ ....

(2) The probability of impossible event = ...

(3) If $\frac{x}{y} = \frac{3}{2}$, then $\frac{2x}{3y} =$ ....

(4) If $k - 5 < 0$, then $k <$ ....

(5) $\frac{1}{2}$, $\frac{3}{4}$, $\frac{7}{8}$, $\frac{15}{16}$, ... , ... (In the same pattern)

3 [a] **Find in $\mathbb{Q}$ the S.S. of the following equation :** $3 - 4x = -5$

[b] A card selected randomly from ten cards numbered from 1 to 10

What is the probability that selected card shows ?

(1) An odd number. (2) A prime even number.

4 [a] **Find the solution set of the following in $\mathbb{Q}$:** $2x + 6 < 16$

[b] Two natural numbers one of them is twice the other and their sum is 45.

Find the two numbers.

5 [a] **Find the solution set of the following inequality where $x \in \mathbb{Q}$:** $5x - 4 \geq 2x + 11$

[b] **Simplify :** $\left(\frac{2^5 \times 3^2}{3^4 \times 2^3}\right)^{-1}$

12 Port Said Governorate

El-Fayrouz Modern School

Answer the following questions :

1 Choose the correct answer :

(1) Which of the following may be a probability of an event ....

(a) – 0.35 (b) 87% (c) 1.05 (d) 130%

(2) $\frac{4\,a^2\,b^4}{2\,a^3\,b^3} =$ ....

(a) $2\,a\,b$ (b) $2\,a^5\,b^7$ (c) $\frac{2\,b}{a}$ (d) $\frac{2}{a\,b}$

(3) If $3\,x + 1 = 25$, then $x =$ ....

(a) 7 (b) 8 (c) 5 (d) 4

(4) $\sqrt{(-8)^2 + (-6)^2} =$ ....

(a) $|-10|$ (b) ± 10 (c) 14 (d) – 14

(5) If $-x > 4$, then ....

(a) $x > -4$ (b) $x > 4$ (c) $x < -4$ (d) $x < 4$

(6) * $5^2 + 5^2 =$ ....

(a) 10^2 (b) 10^4 (c) 5^4 (d) 50

2 Complete the following :

(1) The additive inverse for $\left(\frac{2}{-3}\right)^{-3}$ is ....

(2) If A = 0.000625 , then $\sqrt{A} = 2.5 \times 10^{\dots\dots}$

(3) 0.00037 in scientific notation = ...

(4) If $5\,x = 35$, then $2\,x + 1 =$ ....

(5) In the experiment of tossing a die once , then the probability of appearance even number is ....

3

[a] Three consecutive even numbers their sum = 204 , find these numbers.

[b] If $x = \frac{-1}{2}$, $y = \frac{-3}{4}$, **find in the simplest form the value of :** $\left(\frac{y}{x^2}\right)^{-2}$

4

[a] **Find in the simplest form :** $\left(\frac{7^4 \times 7^{-2}}{7^3}\right)^{-2}$

[b] **Find the value of :** $12 \times (2)^2 \div 24 + 3^2$

5 **[a] Find the solution set of the inequality in $\mathbb{Z}$: $3 - 2x \geq 1$**

[b] A box contains 4 white balls , 6 blue balls and 5 red balls. A ball is drawn randomly.

Find the probability of getting :

(1) Red ball. (2) White or blue ball.

13 Kafr El-Sheikh Governorate

Inspection of Mathematics
Language Schools

Answer the following questions :

1 **Choose the correct answer :**

(1) If $x + 9 = -11$, then $x =$ ....

(a) 2 (b) – 2 (c) 20 (d) – 20

(2) If $a - 3 < 0$, then a 3

(a) < (b) = (c) > (d) ≥

(3) Half of $4^{20} =$ ....

(a) 4^{19} (b) 2^{20} (c) 4^{39} (d) 2^{39}

(4) $3^{x} + 3^{x} + 3^{x} =$ ....

(a) 3^{x} (b) 3^{x+1} (c) 27^{x} (d) 3^{x}

(5) $\frac{1}{2}$, $\frac{3}{4}$, $\frac{7}{8}$, ... (In the same pattern)

(a) $\frac{1}{5}$ (b) $\frac{8}{9}$ (c) $\frac{15}{16}$ (d) $\frac{20}{25}$

(6) ✱ $0.027 = \left(\frac{3}{10}\right)^{\cdots\cdots}$

(a) 1 (b) 2 (c) 3 (d) 9

2 **Complete each of the following :**

(1) $\sqrt{9 + 16} = 4 +$ ....

(2) $\sqrt{\left(\frac{-4}{9}\right)^2} =$ ....

(3) The probability (∅) = ...

(4) $\frac{x}{y} = \frac{7}{2}$, then $\frac{2x}{7y} =$ ....

(5) Find the value of x , if $\frac{26}{x} + 1 = 14$, then $x =$ ....

3 **[a] Find the S.S. of the following in $\mathbb{Q}$:**

(1) $3 - 2X \geq 1$ (2) $4(X - 1) = X + 3$ (3) $\frac{5}{6}X - 4 = 11$

[b] If $\frac{3}{4}$ of area of square $= 1\frac{11}{64}$ m^2. Find its perimeter.

---

4 **[a]** The sum of the ages of 3 brothers now is 55 years. If the eldest was born before the middle by 3 years and the middle was born before the youngest by two years. Find the age of each of them.

[b] A card is chosen at random from ten cards numbered from 1 to 10

What is probability that the selected card shows :

(1) An even number. (2) A getting number divisible by 3

---

5 **Find : [a]** $\frac{4}{9} \times 11 + \frac{4}{9} \times 15 + \frac{4}{9}$ **[b] Simplify :** $\frac{7^3 \times 7^3}{(-7)^2}$

14 Beni Suef Governorate

Directorate of Official Language Sch.
Education Administration

Answer the following questions :

1 **Choose the correct answer :**

(1) Which of the following is the smallest number ?

(a) 314×10^3 (b) 3.14×10^4 (c) 31.4×10^5 (d) 0.314×10^8

(2) $|-3| + |5| =$ ....

(a) -8 (b) -2 (c) 2 (d) 8

(3) If $5X = 35$, then the value of : $2X + 1 =$ ....

(a) 7 (b) 8 (c) 15 (d) 71

(4) A class has 25 boys and 20 girls , one pupil of them is chosen randomly , then the probability that the chosen pupil is a girl = ...

(a) $\frac{1}{25}$ (b) $\frac{1}{20}$ (c) $\frac{4}{9}$ (d) $\frac{5}{9}$

(5) Which of the following may be probability of an event ?

(a) -0.35 (b) 98% (c) 102% (d) 1.13

(6) ✻ If $a^{-1} = \frac{2}{3}$, then $a =$ ....

(a) $-\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $-\frac{3}{2}$ (d) 1

2 Complete each of the following :

(1) $\sqrt{\frac{16}{49}} =$ ....

(2) If $X = \frac{1}{2}$ and $y = \frac{1}{4}$, then $(X + y)^{-1} =$ .... (in its simplest form)

(3) The probability of the impossible event = ...

(4) 1 , 1 , 2 , 3 , 5 , 8 , ... , ... (in its same pattern)

(5) If a = 0.000225 , then $\sqrt{a} = 1.5 \times 10^{\cdots\cdots\cdots}$

---

3 [a] Find the value of : $\frac{4 \times 4^{-2}}{4^{-3}}$ in the simplest form

[b] If $(AB)^2 = 36$ cm^2 , $(BC)^2 = 121$ cm^2 and $B \in \overline{AC}$, find the length of $\overline{AC}$

---

4 [a] Find in $\mathbb{Q}$ the solution set of the inequality : $2X - 1 \geq 5$

[b] **Find the value of :** $10 \times 4 - (2 \times 6 - 8)$ in its simplest form

---

5 [a] Two integer numbers , the smaller one is $2X$ and the greater is $5X$, if the difference between them is 30 , Find the two numbers.

[b] The set {2 , 3 , 5} is used in writing a 2 – digit number.

Find the probability of each of the following events :

(1) The sum of the two digits is 8 (2) Both of the two digits are equal

15 Red Sea Governorate

Quseir Educational Administration
Quseir Official Language Schools

Answer the following questions :

1 Choose the correct answer :

(1) $(4)^{-1} =$ ....

(a) $-\frac{1}{4}$ (b) $\frac{1}{4}$ (c) 4 (d) – 4

(2) $(3^{-2})^{-2} =$ ....

(a) 3^4 (b) 3^{-4} (c) 3^2 (d) 3^{-2}

(3) If $3\,t = 6$, then the value of $6\,t =$ ....

(a) 2 (b) 12 (c) 3 (d) 6

(4) If $-2X > 6$, then X .... – 3

(a) < (b) = (c) > (d) ≤

(5) A cubic die with numbers 1 to 6 is rolled once , the probability of rolling a of odd number = ...

(a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{2}{3}$

(6) ✻ $2^2 + 2^2 = 2^{\dots\dots}$

(a) 4 (b) 2 (c) 3 (d) 8

---

2 Complete the following :

(1) The probability of impossible event = ...

(2) $\sqrt{25 - 9}$ = ...

(3) If the probability that the pupil succeeds is 0.85 , then the probability of his failure is ....

(4) $5\,x^0$ = ...

(5) 2.37×10^{-4} = ...

---

3 Solve each of the following in $\mathbb{Q}$:

[a] $5\,x - 6 = 34$ [b] $x + 4 > 1$

---

4 [a] A box contains 5 white , 4 black and 7 red balls. A ball is drawn randomly from the box.

Calculate the probabilities of the following events :

(1) The ball is white

(2) The ball is red

(3) The ball is not white

[b] Two integers number the smaller one is $2\,x$ and the greater is $5\,x$, if the difference between them is 30 find the two numbers.

---

5 Find the result in the simplest form :

[a] $2 \times 6 - 4 \div 2$ [b] $\sqrt{\frac{49\,a^4\,b^2}{9}}$

Model Examinations of the School Book on Algebra and Statistics

Model 1

Answer the following questions :

1 Complete :

1. $\frac{81}{625} = \left(\frac{25}{9}\right)^{\cdots\cdots}$
2. If $7 - 2x = 3$, then $x =$ .... where $x \in \mathbb{N}$
3. $3^{-1} + 4^{-1} =$ ....
4. The standard form of the number $0.7 \times 0.005 =$ ....
5. The probability of the certain event = ...

2 Choose the correct answer :

1. The sum of the probabilities for all possible outcomes of a randomly experiment is ....
   (a) zero (b) 1 (c) > 1 (d) < 1
2. If $3\,a = \sqrt{4}\,b$, then $\frac{a}{b} =$ ....
   (a) 2 : 3 (b) 3 : 2 (c) 3 : 4 (d) 4 : 3
3. $\left(\frac{-2}{3}\right)^{-3}$ equals ....
   (a) $\frac{-27}{8}$ (b) $\frac{-8}{27}$ (c) $\frac{8}{27}$ (d) $\frac{27}{8}$
4. There are 21 boys and 15 girls in a classroom , one pupil is chosen randomly , the probability that the chosen pupil is a girl = ...
   (a) $\frac{5}{12}$ (b) $\frac{7}{12}$ (c) $\frac{4}{7}$ (d) $\frac{5}{6}$
5. $\sqrt{(-8)^2 + (-6)^2} =$ ....
   (a) $|-10|$ (b) ± 10 (c) 14 (d) -14
6. 10 % of L.E. $2\frac{1}{2}$ = L.E. ....
   (a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 1 (d) 25

3 **[a] Simplify to the simplest form :** $\left(-\frac{3}{7}\right)^0 \times \left(\frac{-2}{5}\right)^2 \times \sqrt{6\frac{1}{4}}$

[b] Find the numerical value of the expression :

$3\,a\,b + 8\,a \div (4\,b)$ when $a = 4$, $b = -2$

4 [a] Find in $\mathbb{Q}$ the S.S. of : $3X + 1 = 25$

[b] Find the value of : $\frac{8 \times 8^{-3}}{8^{-4}}$

5 [a] A factory of a tire record the distance that traveled by a certain type of them before damage for 800 units of this type as following.

The distance in thousand (km.)	Less than 50	50 to 100	More than 100 till 150	More than 150
The number of damage tire	80	120	280	320

If you bought a tyre of this type , what is the probability of change it :

1. Before traveled 50 thousand km.
2. After traveled more than 100 thousand km.

[b] Find in $\mathbb{Q}$ the S.S. of : $2X + 5 < 16$

Model 2

Answer the following questions :

1 Complete :

1. $\left(\frac{-2}{3}\right)^0 = \dots\dots$ 2. $\sqrt{\frac{16}{49}} = \dots\dots$
3. The probability of the impossible event = ...
4. 1 , 2 , 3 , 5 , 8 , ... , ... (In the same pattern)
5. If the probability that the student is absent in a school is 0.15 , if the number of students of this school is 600 , then the number of the present students that day is ......

2 Choose the correct answer :

1. $2^3 \times 2^3 = \dots\dots$

(a) 2^6 (b) 2^8 (c) 2^{15} (d) 2^{53}

2. Which of the following is the greatest ?

(a) 2.3×10^4 (b) 2.3×10^5 (c) 3.2×10^4 (d) 3.2×10^5

3 $(x^2)^{-3} \times x^6 =$ ....

(a) x^{12} (b) x^{-12} (c) x (d) 1

4 Which of the following may be probability of an event ?

(a) -0.35 (b) 87 % (c) 1.05 (d) 130 %

5 If $-x > 4$, then ....

(a) $x > -4$ (b) $x > 4$ (c) $x < -4$ (d) $x < 4$

6 Area of a rectangle of length 120 cm. and width 80 cm. equals .... m^2

(a) 9600 (b) 400 (c) 9.6 (d) 0.96

3 [a] Two integers numbers , the smaller one is $2x$ and the greater is $5x$, if the difference between them is 30 Find the two numbers.

[b] **Find the value of :** $\frac{5^{-4} \times 5^7}{5^3}$ in the simplest form.

4 [a] **Find in $\mathbb{Q}$ the S.S. of each of the following :**

1 $(3x + 2) + 5 = 13$

2 $2x + 15 < 19$

[b] **Find the value of the expression in the simplest form :**

$\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{3}{7}\right)^0$

5 [a] If a regular die is thrown once and observed the number on upper face ,

find the probability of each of the following :

1 Getting a prime even number.

2 Getting an odd number less than 4

[b] If $x = -\frac{1}{2}$, $y = -\frac{3}{4}$, **find in the simplest form :** $\left(\frac{y}{x^2}\right)^{-2}$

Model examination for the merge students

Answer the following questions :

1 Choose the correct answer :

1. $\left(\frac{-2}{3}\right)^2 =$ ....
   (a) $\frac{4}{9}$ (b) $\frac{-4}{9}$ (c) $\frac{4}{6}$ (d) $\frac{-4}{6}$
2. $\left(\frac{4}{7}\right)^0 =$ ....
   (a) 0 (b) 1 (c) $\frac{4}{7}$ (d) -1
3. $2 \times 6 - 4 \times 2 =$ ....
   (a) 4 (b) 8 (c) 10 (d) 2
4. $(7)^{-2} =$ ....
   (a) 49 (b) $\frac{1}{49}$ (c) 14 (d) -14
5. $\sqrt{9 + 16} =$ ....
   (a) 7 (b) 5 (c) 25 (d) -7

2 Complete each of the following :

1. If $X + 2 = 6$, then $X =$ ....
2. When tossing a coin once , then the probability of the appearance of a tail = ...
3. The probability of the impossible event = ...
4. $\sqrt{\left(\frac{2}{5}\right)^2} =$ ....
5. $7\,(6^2 - 5 \times 6) =$ ....

3 Complete the solution to find the result :

1. $12 \times 2^2 \div 24 + 3^2 = 12 \times$ .... $\div 24 +$ ....
   $=$ .... $\div 24 +$ .... $=$ .... $+$ .... $=$ ....
2. $\frac{8 + 20 - 4}{8 - 4} = \frac{\text{.......} - 4}{\text{.......}} = \frac{\text{.......}}{\text{.......}} =$ ....

4 **Put (✓) or (✗) :**

1. If $2x + 3 = 7$, then $x = 2$ ( )
2. $\left(\frac{2}{3}\right)^2 \times \left(\frac{2}{3}\right)^5 = \left(\frac{2}{3}\right)^6$ ( )
3. $(x^2)^3 = x^6$ ( )
4. $\left(\frac{3}{2}\right)^2 = -\frac{9}{4}$ ( )
5. $\sqrt{100 - 64} = 2$ ( )

5 **A card is drawn randomly from 8 cards numbered from 1 to 8 , join from column (A) to column (B) :**

Column (A)	Column (B)
1. The event of getting an even number equals	• $\frac{1}{2}$
2. The probability of getting an even number equals	• $\{8, 6, 4, 2\}$
3. The event of getting a number > 6 equals	• 1
4. The probability of getting a number < 9 equals	• $\frac{1}{8}$
5. The probability of getting a number 8 equals	• $\{8, 7\}$

Schools Examinations on Algebra and Statistics

1 Cairo Governorate

AL Nozha Directorate of Education
Modern Language Schools

Remark: Some school exams are modified to include what was canceled last year

Answer the following questions :

1 Choose the correct answer :

1. $7x^{-1} =$ ....
   (a) $7x$ (b) $\frac{7}{x}$ (c) $7x^2$ (d) 0
2. If $-x < 2$, then ....
   (a) $x < 2$ (b) $x \le 2$ (c) $x > 2$ (d) $x > -2$
3. $\frac{6a^2x^4}{2a^3x^3} =$ .... where $a \ne 0$, $x \ne 0$
   (a) $3ax$ (b) $3a^5x^7$ (c) $\frac{3x}{a}$ (d) $\frac{3}{ax}$
4. $\sqrt{(-6)^2 + (-8)^2} = 25 -$ ....
   (a) 15 (b) 10 (c) 6 (d) 8
5. If $5x = 35$, then $2x + 1 =$ ....
   (a) 7 (b) 8 (c) 15 (d) 7
6. $2^3 \times 2^5 =$ ....
   (a) 2^2 (b) 2^8 (c) 2^{15} (d) 2^{53}

2 Complete :

1. $\sqrt{\frac{25x^2y^2}{36}} =$ ....
2. The S.S. of : $x + 21 = 8$ in $\mathbb{Z}$ is ....
3. The additive inverse of $\left(\frac{-2}{5}\right)^2 =$ ....
4. The probability of certain event = ...
5. ❋ $5 + 8 \div 2 - 3 \times 4 =$ ....

3 **[a]** If $x = \frac{-3}{2}$, $y = \frac{1}{2}$, $z = \frac{-4}{3}$, **find the numerical value of :** $x^2 y^2 z^2$

[b] Find the S.S. of : $5x + 8 = 13 - 2x$, $x \in \mathbb{Q}$

4 **[a] Find the S.S. in** $\mathbb{Q}$ **:** $3x - 1 \le 5$

[b] Find the value of : $\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{3}{7}\right)^0$

5 **[a]** A box contain 4 white balls , 5 red balls , 6 blue balls. One ball is drawn randomly ,
Find the probability of the drawn ball is :

1 red 2 black 3 white or blue

[b] Two natural numbers , one of them twice the other and their sum is 24
Find the two numbers.

2 Cairo Governorate

El Maadi Directorate
El Orman Smart School

Answer the following questions :

1 Choose the correct answer :

1 If $0 \in \{5 , x-3\}$, then $x =$ ....

(a) 0 (b) − 5 (c) 3 (d) − 3

2 $3^4 \times 3^3 =$ ....

(a) 3^{12} (b) 3^7 (c) 3 (d) 3^{-1}

3 The S.S. of the inequality : $x < 3$ in $\mathbb{N}$ is ....

(a) $\{0\}$ (b) $\{0 , 1 , 2\}$ (c) $\{1 , 2\}$ (d) $\varnothing$

4 $\frac{6 a^3 x^4}{3 a^2 x^3} =$ .... where $a \neq 0 , x \neq 0$

(a) $2 a x$ (b) $2 a^2 x^7$ (c) $\frac{3 x}{a}$ (d) $\frac{3}{a x}$

5 $\left(\frac{-2}{3}\right)^{-3} =$ ....

(a) $\frac{27}{8}$ (b) $\frac{-8}{27}$ (c) $\frac{8}{27}$ (d) $\frac{-27}{8}$

6 If the probability of success of a student is 0.6 , then the probability of his failure is ....

(a) 1 (b) $\frac{1}{10}$ (c) $\frac{4}{10}$ (d) $\frac{6}{10}$

2 Complete the following :

1 The multiplicative inverse of 7 is ....

2 0.00025 in scientific notation = ...

3 $\left(\frac{3}{4}\right)^2 \div \left(\frac{3}{4}\right)^3 =$ ....

4 $\sqrt{16 + 9} = 4 +$ ....

5 A class has 36 pupils , 25 of them are boys , if a pupil is chosen randomly , then the probability that the pupil is a girl = ...

3 **[a] Find the simplest form of :** $\left(\frac{7^{-2} \times 7^{5}}{7^{3}}\right)^{2}$

[b] Simplify and find the value of : $\left(-\frac{3}{2}\right)^{2} \times \sqrt{\frac{64}{9}} \times \left(\frac{2}{5}\right)^{0}$

[c] ✻ Find the value of : $12 \times 2^{2} \div 24 + 3^{2}$

4 **[a]** 1 **Calculate :** $\sqrt{100-(-8)^{2}}$

2 If $x = \frac{1}{2}$, $y = \frac{2}{3}$ **, then find the value of :** $(x^{2} y^{2})^{-3}$

[b] Find in $\mathbb{Q}$ the S.S. of the inequality : $3x + 6 > 3$

5 **[a] Find the solution set in $\mathbb{Q}$:** $4x - 5 = 27$

[b] A fair die is rolled once. **Calculate the probability of appearance :**

1 an even number. 2 a number greater than 4

3 Cairo Governorate

El-Zeiton Zone
Talaea Gaber El Ansary Language School

Answer the following questions :

1 **Choose the correct answer :**

1 If $4x = 20$, then $3x - 1 =$ ....

(a) 13 (b) 14 (c) 15 (d) 16

2 $3^{10} + 3^{10} + 3^{10} =$ ....

(a) 9^{30} (b) 3^{30} (c) 3^{10} (d) 3^{11}

3 If $\frac{4x-1}{2x+3} = 0$ where $x \in \mathbb{Q}$, then $x =$ ....

(a) $-\frac{3}{2}$ (b) $\frac{2}{3}$ (c) $\frac{1}{4}$ (d) 0

4 A class contains 40 students , 36 of them are succeed in a test , then the probability of failed is ....

(a) 0.1 (b) 0.9 (c) 0.3 (d) $\frac{2}{3}$

5 $\sqrt{(8)^{2} + (6)^{2}} = 8 +$ ....

(a) 14 (b) 10 (c) 2 (d) 6

6 $\frac{|-5|+1}{3}$ .... $\mathbb{Z}$

(a) $\in$ (b) $\notin$ (c) $\subset$ (d) $\not\subset$

2 **Complete the following :**

1 If $0.0000016 = 1.6 \times 10^{n}$, then $n =$ ....

2 The multiplicative invers of $\sqrt{5\frac{4}{9}}$ = ...

3 When a fair die is tossed once , then the probability of getting an even prime number = ...

4 If $\frac{3}{4}x = 75$, then $\sqrt{x}$ = ...

5 25 % from .... = 8

3 [a] **Find in the simplest form :** $\left(\frac{5^5 \times 5^{-2}}{5^4}\right)^{-2}$

[b] **Find the S.S. in $\mathbb{Q}$:** $-2 < 4x + 1 < 6$

4 [a] **Simplify :** $\left(\frac{-2}{7}\right)^{-2} \times \sqrt{\frac{16}{49}} \times \left(\frac{-1}{7}\right)^0$

[b] If the length of a rectangle is 5 cm. more than its width and its perimeter is 42 cm. Find the area of this rectangle.

5 [a] **Simplify :** $\frac{(4x^3 y^2)^2}{(2xy^2)^3}$, then find the value when $x = \frac{1}{2}$, y = 3

[b] A team plays 30 matches in national league its drawn probability is 0.2 and its win probability is 0.7 Calculate the number of loss matches.

4 Giza Governorate

El-Dokki Directorate
Modern Narmerlanguage School

Answer the following questions :

1 Choose the correct answer :

1 If $\left(\frac{1}{2}\right)^x = 8$, then x = ...

(a) 4 (b) −4 (c) 3 (d) −3

2 $\sqrt{\left(\frac{-2}{9}\right)^2}$ = ...

(a) $\pm\frac{2}{9}$ (b) $\frac{2}{9}$ (c) $\frac{-2}{9}$ (d) $\frac{2}{3}$

3 If $x + 4 = 10$, then $5x$ = ...

(a) 30 (b) 20 (c) 12.5 (d) 25

4 If $(2^x)^y = 8$, then ....

(a) $x + y = 3$ (b) $xy = 3$ (c) $x - y = 3$ (d) $\frac{x}{y} = 3$

5 If x is a rational number where $-x > 4$, then ....

(a) $x > -4$ (b) $x > 4$ (c) $x < -4$ (d) $x < 4$

6 If a letter is selected randomly from the word "SCHOOL" , then the probability that the letter is O equals ....

(a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{3}$ (d) $\frac{1}{6}$

2 Complete :

1 If $\sqrt{x+3}=3$, then $x=$ ....

2 $\left(1\frac{1}{2}\right)^{-2}=$ ....

3 $2^5 \times 5^5 = 10^{\cdots\cdots}$

4 ❋ $4 \times 3^2 - 20 =$ ....

5 The probability of the certain event is ....

3 [a] Find in the simplest form : $\left(\frac{-5}{7}\right)^0 \times \left(\frac{-3}{2}\right)^2 \times \sqrt{\frac{16}{9}}$

[b] Write the result of the following in the standard form of $a \times 10^n$, $n \in \mathbb{Z}$:

$(4.4 \times 10^3) \times (3 \times 10^5)$

4 [a] Find in $\mathbb{Q}$ the solution set of the equation : $3x+1=25$

[b] Find the valve of : $\frac{3^{-4} \times 3^7}{3^3}$ in the simplest form.

5 [a] Find in $\mathbb{Q}$ the solution set of the inequality : $2x+5<9$

[b] If a die is rolled once and the number of dots on the upper face is observed, write down the sample space **, then find the probability of the following events :**

1 getting a number greater than 6

2 getting a number satisfies the inequality : $1 < x < 6$

3 getting a number divisible by 3

5 Giza Governorate

Omrania Directorate
El Sadat E.L.S

Answer the following questions :

1 Choose the correct answer :

1 $x^{12} \div x^4 =$ .... where $x \neq 0$

(a) x^8 (b) x^3 (c) x^{16} (d) x^{-8}

2 $\pm\sqrt{\frac{4}{9}} =$ ....

(a) $\frac{-4}{9}$ (b) $\frac{-2}{3}$ (c) $\pm\frac{2}{3}$ (d) $\frac{2}{3}$

3 If the probability that pupils success is 75 % , then the probability of his failure is ....

(a) – 0.75 (b) 0.25 (c) – 0.25 (d) 0.75

4 If $-x < 7$, then x .... -7

(a) < (b) > (c) = (d) ≤

5 $6000 \times 50 =$ ....

(a) 300×10^2 (b) 30×10^5 (c) -3×10^3 (d) 3×10^5

6 If $3x = 6$, then $5x =$ ....

(a) $\frac{5}{2}$ (b) $\frac{2}{5}$ (c) 10 (d) 5

2 Complete each of the following :

1 The probability of impossible event is ....

2 The additive inverse of the number $\left(\frac{-1}{3}\right)^2$ is ....

3 $\sqrt{16+9} =$ ....

4 $\left(\frac{2}{5}\right)^{-2} =$ ....

5 $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$, ... (in the same pattern)

3 [a] Find in the simplest from :

1 $\frac{9^{-2} \times 9^5}{9^3}$ 2 $\left(\frac{-3}{2}\right)^2 \times \sqrt{\frac{64}{9}} \times \left(\frac{5}{2}\right)^0$

[b] Find in $\mathbb{Q}$ the solution set of the following equation : $4x + 1 = 21$

4 [a] If $x = \frac{1}{2}$, $y = \frac{2}{3}$, $z = \frac{-3}{2}$ **, then find the value of :** $(x\,y\,z)^2$

[b] Find in $\mathbb{Q}$ the solution set of the following inequality : $3x - 1 \le 2x + 3$

5 [a] The sum of three consecutive numbers is 24 , find them.

[b] A fair die is rolled once **, calculate the probability of appearance :**

1 an even number. 2 a number greater than 5

6 Alexandria Governorate

West Educational Zone
Inspectorate of Mathematics

Answer the following questions :

1 Complete each of the following :

1 The multiplicative identity element in $\mathbb{Q}$ is ....

2 $\sqrt{\frac{25}{49}} = \cdots\cdots$

3 $(x-5)^0 = 1$, if $x \neq \cdots\cdots$

4 If the probability of success of a student is 0.8 , then the probability of his failure is ……

5 If $X \subset Y$, then $X \cap Y = \cdots\cdots$

2 Choose the correct answer :

1 $\sqrt{64+36} = 8 + \cdots\cdots$

(a) 2 (b) 6 (c) 10 (d) -2

2 Half the number 2^{24} equals ……

(a) 2^{12} (b) 1^{23} (c) 2^{23} (d) 1^{12}

3 $0.0000068 = \cdots\cdots$

(a) 6.8×10^{-6} (b) 6.8×10^{5} (c) 6.8×10^{-7} (d) 6.8×10^{7}

4 If $2x = -12$, then $x^2 = \cdots\cdots$

(a) 6 (b) 144 (c) -36 (d) 36

5 The S.S. of the equation $5 - x = 3$ in $\mathbb{Q}$ is ……

(a) $\{2\}$ (b) $\{-2\}$ (c) $\{7\}$ (d) $\varnothing$

6 The probability of a certain event equals ……

(a) zero (b) 1 (c) -1 (d) $\frac{1}{2}$

3 [a] Simplify to the simplest form : $\frac{x^3 \times x^{-2}}{x^{-5} \times x}$ **, then find the value when** $x = (-2)$

[b] Find the S.S. in $\mathbb{Q}$ for each of the following :

1 $3x - 5 > 1$ 2 $3x + 6 = 30 - 5x$

4 [a] A fair die is rolled once **, what is the probability of getting :**

1 an even number ? 2 a factor of 6 ?

[b] Find the value of : $\sqrt{6\frac{1}{4}} \times \left(\frac{2}{7}\right)^0 \times \left(\frac{-2}{5}\right)^2$

5 [a] A rectangle whose length is more than its width by 3 and its perimeter equals 26 , find its area.

[b] If $x = \frac{1}{2}$ and $y = \frac{4}{3}$ **find the value of :** $x^3 y^2$

7 Alexandria Governorate

El-Montaza Educational Zone
Math's Supervision

Answer the following questions :

1 Choose the correct answer :

1. $2^3 \times 2^5 =$ ....
   (a) 2^2 (b) 2^8 (c) 2^{15} (d) 2^{53}
2. Which of the following may be a probability of an event ?
   (a) -0.25 (b) 87 % (c) 1.05 (d) 130 %
3. The multiplicative inverse of the number $\sqrt{\frac{9}{16}}$ is ....
   (a) $\frac{-4}{3}$ (b) $\frac{-3}{4}$ (c) $\frac{4}{3}$ (d) $\frac{3}{4}$
4. $5\,x^{-1} =$ ....
   (a) $-5\,x$ (b) $5\,x$ (c) $\frac{5}{x}$ (d) $\frac{1}{5\,x}$
5. If $-x < 3$, then ....
   (a) $x > -3$ (b) $x > 3$ (c) $x < -3$ (d) $x < 3$
6. If $x + 2 = 5$, then $5\,x =$ ....
   (a) 3 (b) 35 (c) 15 (d) 7

2 Complete :

1. The probability of the certain event = ...
2. If $0.00057 = 5.7 \times 10^n$, then n = ...
3. The additive inverse of $\left(\frac{-2}{3}\right)^2$ is ....
4. $\sqrt{16 + 9} = 4 +$ ....
5. $2^{10} + 2^{10} = 2^{\cdots\cdots}$

3

[a] Find in $\mathbb{Q}$ the solution set of the following : 1 $3\,x + 1 = 16$ 2 $7\,x - 1 < 13$

[b] * Find the value of : $5^2 + [3 \times 8 \div 2^2 - 2 \times 3]$

4

[a] If $x = \frac{1}{3}$, $y = \frac{1}{6}$, find the numerical value of : $(x + y)^{-1}$

[b] What is the number that if added to its three times , the result is 24 ?

5

[a] Simplify : $\frac{a^3 \times a^{-8}}{a^{-5}}$, $a \neq 0$

[b] A box contains 4 white , 5 red and 6 blue balls , a ball is drawn randomly from the box , find the probability of getting the following events :

1. the ball is blue.
2. the ball is white or red.

8 El-Kalyoubia Governorate

Directorate of Education
Math Supervision

Answer the following questions :

1 Choose the correct answer :

1. The number which is not in the standard form is ....
 (a) 6.2×10^5 (b) 7.834×10^{16} (c) 0.8×10^5 (d) 6.7×10^{25}
2. If $3t = 6$, then $6t =$ ....
 (a) 16 (b) 14 (c) 12 (d) 10
3. $\frac{1}{4} \times 4^{20} =$ ....
 (a) 4^{15} (b) 4^{19} (c) 2^{19} (d) 2^{39}
4. $\frac{6a^2 x^4}{2a^3 x^3} =$ .... where $a \neq 0$, $x \neq 0$
 (a) $3ax$ (b) $3a^5 x^7$ (c) $\frac{3x}{a}$ (d) $\frac{3}{ax}$
5. A class formed from 36 students , 16 of them are girls. If a student selected randomly from the class , then the probability that the student is a boy = ...
 (a) $\frac{4}{9}$ (b) $\frac{5}{9}$ (c) $\frac{1}{2}$ (d) $\frac{1}{36}$
6. 10 % of $2\frac{1}{2}$ L.E. = ... L.E.
 (a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) 1 (d) 25

2 Complete :

1. The additive inverse of $\left(\frac{-2}{3}\right)^4$ is ....
2. When a die is tossing twice and observed the upper face in each time the probability of appearance number 5 on the two faces is ....
3. $\sqrt{10^2 - 6^2} =$ ....
4. If $-x + 2 > 6$ and the substitution set $= \{-2 , -5 , -1\}$, then $x =$ ....
5. If $3a = \sqrt{4}\,b$, then $\frac{a}{b} =$ ....

3 **[a] Find in simplest form :** $\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{a}{b}\right)^0$ where $a \neq 0$, $b \neq 0$

[b] If $x = \frac{-1}{2}$, $y = \frac{-3}{4}$, **find the value of :** $\left(\frac{y}{x}\right)^{-2}$

4 Find in $\mathbb{Q}$ the S.S. of :

1. $3x + 1 = 25$
2. $15 + 2x < 1$

5 **[a] Find with steps the value of :** $\left(2 \times \sqrt{36} - 2^4\right) \div 4$

[b] If a regular die is thrown once and observing the number on the upper face
Find the probability of getting :

1 a prime even number.

2 an odd number less than 4

9 El-Sharkia Governorate

East Zagazig Educational Administration
Omar AL-Farouk Formal Language School

Answer the following questions :

1 **Complete the following :**

1 $\left(\frac{-2}{3}\right)^0 =$ ....

2 The probability of certain (sure) event = ...

3 $\sqrt{a^4 b^2} =$ ....

4 The number 0.00023 in the standard form is ....

5 ✱ $7(6^2 - 5 \times 6) =$ ....

2 **Choose the correct answer :**

1 Half the number $2^{10} =$ ....

(a) 2^{10} (b) 2^{11} (c) 2^9 (d) 2

2 $\sqrt{10^2 - 6^2} =$ ....

(a) 4 (b) 8 (c) 1 (d) 0

3 If the probability of success of a student is 0.7 , then the probability of his failure is ....

(a) 0.7 (b) 0.4 (c) 1 (d) 0.3

4 $7^{-1} =$ ....

(a) $\frac{1}{7}$ (b) 7 (c) $\frac{-1}{7}$ (d) -7

5 $\frac{4}{10} + \frac{3}{100} =$ ....

(a) 0.34 (b) 0.43 (c) 4.3 (d) 3.4

6 $5^2 \times 5^4 =$ ....

(a) 5^5 (b) 25^6 (c) 5^6 (d) 25^8

3 **[a] Find in $\mathbb{Q}$ the solution set of :** $2x + 1 = 9$

[b] Find the value of the following in the simplest form : $\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} + \left(\frac{3}{7}\right)^0$

4 **[a] Simplify to the simplest form :** $\frac{3^6 \times 3^{-2}}{3^2}$

[b] If $x = \frac{-1}{2}$, $y = \frac{3}{4}$, **find the value of :** $\frac{y}{x^2}$

5 **[a] Find in $\mathbb{Q}$ the solution set of :** $3x - 2 \le 7$

[b] A box contains 5 black balls , 3 white balls and 6 red balls , if a ball is drawn randomly from the box **Calculate the probability of :**

1 the ball is white. 2 the ball is not red.

10 El-Monofia Governorate

Monof Educational Directorate

Answer the following questions : **(Calculators are Permitted)**

1 **Choose the correct answer :**

1 $(3^2)^3 =$ ....
(a) 3^5 (b) 2^6 (c) 9^3 (d) 3^8

2 $|-3|+5 =$ ....
(a) -8 (b) -2 (c) 2 (d) 8

3 If $A = 7^x$, $B = 7^{-x}$, then $A \times B =$ ....
(a) 49 (b) 7 (c) 1 (d) 0

4 Quarter of $2^{20} =$ ....
(a) 2^{10} (b) 2^{19} (c) 4^{19} (d) 4^9

5 0.0037 in the standard form is 3.7×10^x , then $x =$ ....
(a) 3 (b) 4 (c) -3 (d) -4

6 Which of the following could be a probability of an event ?
(a) 2 (b) 3 (c) -1 (d) 3 %

2 **Complete each of the following :**

1 1 , 2 , 3 , 5 , 8 , ... (in the same pattern).

2 The S.S. of inequality : $-x > 0$ in $\mathbb{N}$ is ....

3 $\sqrt{3^2 + 4^2} = 2 +$ ....

4 $\frac{8}{27} = \left(\frac{\cdots\cdots}{\cdots\cdots}\right)^3$

5 The probability of impossible event = ...

3 [a] **Find the S.S. of the following in $\mathbb{Q}$:**

1. $5x - 2 = 8$
2. $2x + 3 > 4$

[b] ✻ **Calculate the value of :** $2[(5^2 + 1) - (4^2 - 1)]$

4 [a] **Simplify :** $\left(\frac{-2}{3}\right)^3 \times \sqrt{\frac{81}{64}} \times \left(\frac{1}{3}\right)^{zero}$

[b] A box contains 3 red balls , 4 yellow balls and 5 green balls. A ball is drawn randomly from the box. **Find the probability of the drawn ball is :**

1. yellow.
2. not green.

5 [a] **Evaluate :** $\frac{7^5 \times 7^{-2}}{7^3}$

[b] If $x = \frac{1}{2}$, $y = \frac{1}{3}$, **find the value of the expression :** $(4x^2 - y)^2$

11 El-Dakahlia Governorate

Dakahlia Directorate of Education
Math supervision

Answer the following questions :

1 **Choose the correct answer from those given :**

1. The additive inverse of $(-1)^{10}$ is ....
   (a) 0 (b) -1 (c) -10 (d) 1
2. Half milliard $= 5 \times 10^{.........}$
   (a) 6 (b) -9 (c) 8 (d) 9
3. Quarter of the number 2^{16} is ....
   (a) 1^{16} (b) 4^7 (c) 4^{15} (d) 2^4
4. $\sqrt{144 + ...} = 12 + 5$
   (a) 40 (b) 25 (c) 16 (d) 145
5. If the probability of success of a student is 0.7 , then the probability of his failure is ....
   (a) 0.03 (b) 1 (c) 30 % (d) 3
6. If $8y = 16$, then $y + 5 =$ ....
   (a) 10 (b) 13 (c) 21 (d) 7

2 **Complete each of the following :**

1. The smallest odd prime number is ....
2. If the area of a square is $169\ k^2\ cm^2$. , then its side length = ... cm.

3 If $y = \frac{1}{4}$, $x = \frac{1}{3}$, then $(x - y)^{-2} =$ ....

4 .... is a subset of the sample space.

5 The S.S. of the inequality $5 \leq x \leq 6$ in $\mathbb{N}$ is ....

3 **[a] Divide :** $(25\,a\,b + 5\,a) \div 5\,a$, then find the numerical value of the expression when $a = 2$, $b = -1$

[b] Simplify to the simplest form : $\left(-\frac{49}{25}\right)^0 \times \left(\frac{-2}{7}\right)^2 \times \sqrt{12\frac{1}{4}}$

4 **[a] Find in $\mathbb{Q}$ the S.S. of the following :**

1 $2x + 7 < 15$

2 $6x + 6 = 6$

[b] Simplify to the simplest form : $\frac{(3)^{-6} \times (3)^{11}}{(3)^3}$

5 **[a] Find in $\mathbb{N}$ the S.S. of the inequality :** $5x - 2 \geq 3$, then represent it on the number line.

[b] A ball chosen randomly from a bag contains 5 red balls , 7 blue balls , 3 yellow balls , **find the probability of each of the following :**

1 getting black ball.

2 getting a red ball.

12 El-Ismailia Governorate

Directorate of Education
Math's Supervision

Answer the following questions :

1 **Choose the correct answer :**

1 If $x = y$, then $\left(\frac{3}{4}\right)^{x-y} =$ ....

(a) 0 (b) 1 (c) $\frac{3}{4}$ (d) $\frac{1}{2}$

2 If $4790000 = a \times 10^6$, then a = ...

(a) 479 (b) 47.9 (c) 4.79 (d) 470

3 If $\frac{x-3}{x+4} = 0$, then $x =$ ....

(a) 3 (b) -3 (c) 4 (d) -4

4 The ratio between two numbers is 1 : 2 , if the first is 100 , then the second is ....

(a) 50 (b) 25 (c) 10 (d) 200

5 $7\,x^2\,y^{-3} =$ ....

(a) $\frac{7}{x^2 y^3}$ (b) $\frac{7x^2}{y^3}$ (c) $\frac{x^2 y^3}{7}$ (d) $\frac{x^2}{7y^3}$

6 When tossing a die once , the probability of getting an odd number = ...

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{2}{5}$ (d) $\frac{5}{6}$

2 Complete :

1 If $2x - 1 = 5$, then $10x =$ ....

2 $5y^2 \times 3y^2 =$ ....

3 $\sqrt{\frac{25x^4}{y^4}} =$ .... where $y \neq 0$

4 If $3^{10} + 3^{10} + 3^{10} = 3^x$, then $x =$ ....

5 ✻ $4 + 4 \times 4 \div 4 - 2^2 =$ ....

3 [a] Find in the simplest from : $\left(-\frac{1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{3}{7}\right)^0$

[b] Simplify : $\frac{a^7 \times a^5}{a^4 \times a^6}$, then find the value at $a = -3$

4 [a] Find the S.S. in $\mathbb{Q}$ of : $3x + 4 < 25$

[b] If $x = \frac{1}{2}$, $y = -\frac{2}{3}$, $z = \frac{3}{4}$

Find the value of : $x^2 y^2 \div z$

5 [a] One card is selected randomly from 8 cards numbered from 1 to 8 ,
find the probability of getting :

1 an even number 2 a prime number 3 a number more than 7

[b] Find the S.S. in $\mathbb{Q}$ of : $6x - 8 = 22$

13 Damietta Governorate

Damietta inspection of Mathematic official language schools

Answer the following questions :

1 Choose the correct answer :

1 If $x + 9 = 11$, then the value of $7x =$ ....

(a) 9 (b) 14 (c) 2 (d) 13

2 $\left(\frac{-2}{3}\right)^{-3} =$ ....

(a) $\frac{-27}{8}$ (b) $\frac{-8}{27}$ (c) $\frac{8}{27}$ (d) $\frac{27}{8}$

3 $2^3 + 2^3 =$ ....

(a) 2^6 (b) 2^4 (c) 2^9 (d) 1

4 If $-x > 4$, then ....

(a) $x > -4$ (b) $x > 4$ (c) $x < -4$ (d) $x < 4$

5 $x^2 + x^2 =$ ....

(a) x^4 (b) x^2 (c) $2x^2$ (d) $2x^4$

6 Three times of a number is 48 , then $\frac{1}{4}$ the number is ....

(a) 16 (b) 4 (c) 12 (d) 8

2 Complete each the following :

1 The probability of the certain event equals ....

2 The number 0.000053 in the scientific notation = ...

3 The multiplicative inverse of $\sqrt{\frac{9}{25}}$ is ....

4 A class has 36 pupils , 20 of them are boys. If a pupil is chosen randomly , then the probability that the pupil is a girl = ...

5 1 , 2 , 3 , 5 , 8 , ... (in the same pattern).

3 [a] Simplify to the simplest form : $\left(\frac{-5}{3}\right)^2 \times \left(\frac{-4}{9}\right)^0 \times \sqrt{3\frac{6}{25}}$

[b] Find the solution set of each of the following where $x \in \mathbb{Q}$:

1 $3x + 1 > 25$ 2 $5x + 8 = 15 - 2x$

4 [a] Reduce : $\frac{x^7 \times x^9}{x^6 \times x^8}$ to the simplest form , then find the value of the result when : $x = -3$

[b] The sum of three consecutive even numbers is 60 , Find them.

5 [a] If $x = 3$ and $y = -4$, **find the value of :** $\sqrt{x^2 + y^2}$

[b] A box contains 4 white , 5 red and 6 blue balls , a ball is drawn randomly from the box. **Calculate the probability of getting :**

1 a blue ball. 2 a white or red ball. 3 a green ball.

14 El-Fayoum Governorate

Fayoum west Administration

Answer the following questions :

1 Choose the correct answer :

1 The multiplicative inverse of $\sqrt{\frac{100}{81}} =$ ....

(a) $\pm \frac{10}{9}$ (b) $\pm \frac{9}{10}$ (c) $\frac{10}{9}$ (d) $\frac{9}{10}$

2 The probability of the impossible event = ...

(a) zero (b) 1 (c) $\frac{1}{2}$ (d) $\frac{1}{3}$

3 If a = b , then $\left(\frac{2}{3}\right)^{a-b}$ = ...

(a) zero (b) 1 (c) $\frac{2}{3}$ (d) $\frac{3}{2}$

4 $3^{10} + 3^{10} + 3^{10}$ = ...

(a) 3^{30} (b) 3^{11} (c) 9^{10} (d) 9^{11}

5 If $3x + 1 = 16$, then the value of $5x$ = ...

(a) 10 (b) 15 (c) 25 (d) 26

6 5^{-1} = ...

(a) -5 (b) $\frac{1}{5}$ (c) 5 (d) 25

2 Complete the following :

1 If $2ab = 10$, then $a^2 b^2$ = ...

2 ✱ $3 \times 4 - 21 \div 3$ = ...

3 $x = \frac{1}{2}$, $y = \frac{3}{4}$, $y \div x$ = ...

4 $\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{8}$, ... , ... (in the same pattern)

5 $(5 \times 10^2) \times (9 \times 10^3)$ = ... (in the standard form)

3 [a] Write the following in the simplest form :

1 $\frac{10^{-3} \times 10^6}{10^2}$ 2 $\frac{\left(\frac{1}{2}\right)^2 \times \left(\frac{1}{2}\right)^{-5}}{\frac{1}{2}}$

[b] Find in $\mathbb{Q}$ the solution set of the following :

1 $8 + 2x = 14$ 2 $3x - 1 = -10$

4 [a] Find in $\mathbb{Q}$ the solution set of each of the following :

1 $2(x - 3) = -x + 12$ 2 $5x - 1 = 29$

[b] Calculate the following when a = 2 , b = 5 : 1 $\frac{9 - b}{a^3}$ 2 $\frac{6^2}{a + 1}$

5 [a] Find in $\mathbb{Z}$ the solution set of the following :

1 $3x - 4 \geq -10$ 2 $x + 2 \geq 2$

[b] A box contains 15 cards numbered from 1 to 15 A card is drawn randomly

Find the probability of the drawn card carries :

1 an odd prime number. 2 a number less than or equals 1

3 a number more than 15 4 the number 15

15 Qena Governorate

Qena Directorate of Education
Math's supervision

Answer the following questions :

1 Choose the correct answer :

1 If $x + 5 = 11$, then $3x =$ ....

(a) 16 (b) 18 (c) 1.8 (d) 6

2 The probability of the certain event = ...

(a) 1 (b) 2 (c) 0 (d) 0.5

3 $\sqrt{13^2 - 5^2} =$ ....

(a) 11 (b) 12 (c) 13 (d) 14

4 If the standard form of 0.00000058 is 5.8×10^n , then n = ...

(a) 7 (b) – 7 (c) 5 (d) 8

5 $10^{-3} =$ ....

(a) 10 (b) 1000 (c) 0.001 (d) 0.01

6 ✻ $3^2 \times 6 \div 3 + (2^4 - 6) =$ ....

(a) 18 (b) 28 (c) 42 (d) 32

2 Complete :

1 If the age of Amir now is x years , then his age after 5 years is .... years.

2 $\sqrt{\left(\frac{-4}{9}\right)^2} =$ ....

3 The probability of the impossible event ....

4 $\left(\frac{4}{9}\right)^{-2} = \left(\frac{9}{4}\right)^n$, then n = ...

5 If half of $2^{40} = 2^n$, then n = ...

3 [a] Find the S.S. in $\mathbb{Q}$ for : $\frac{3}{5}x + 4 < 28$

[b] If $a = \frac{-2}{3}$, $b = \frac{3}{4}$ **find the value of :** $a^3 b^3$

4 [a] Simplify : $\left(\frac{4}{9}\right)^{-2} \times \left(\frac{4}{9}\right)^6$

[b] Three consecutive even numbers their sum is 156 Find the numbers

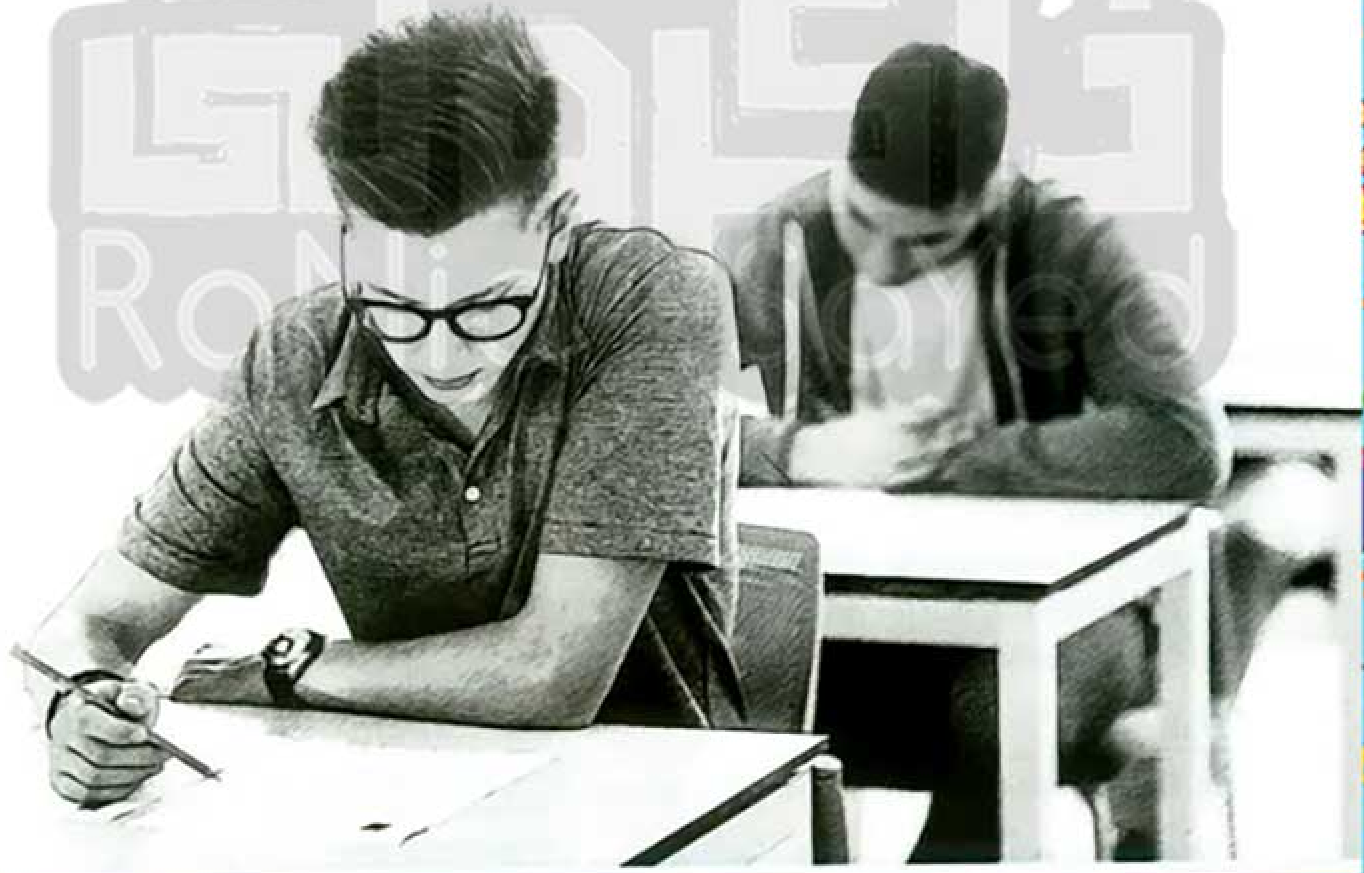
5 [a] If $3^x = 7$, $3^y = 5$ **Find :** 3^{x+y}

[b] A fair die is rolled once. **Calculate the probability of appearance of :**

1 an even number. 2 a number greater than 3 3 the number 5

Final Examinations

on Algebra and Statistics



Model Examinations of the School Book on Algebra and Statistics

Model 1

Answer the following questions :

1 **Complete :**

1. $\frac{81}{625} = \left(\frac{25}{9}\right)^{\cdots\cdots}$
2. If $7 - 2x = 3$, then $x =$ .... where $x \in \mathbb{N}$
3. $3^{-1} + 4^{-1} =$ ....
4. The standard form of the number $0.7 \times 0.005 =$ ....
5. The probability of the certain event = ...

2 **Choose the correct answer :**

1. The sum of the probabilities for all possible outcomes of a randomly experiment is ....
   (a) zero (b) 1 (c) > 1 (d) < 1
2. If $3\,a = \sqrt[3]{4}\,b$, then $\frac{a}{b} =$ ....
   (a) 2 : 3 (b) 3 : 2 (c) 3 : 4 (d) 4 : 3
3. $\left(\frac{-2}{3}\right)^{-3}$ equals ....
   (a) $\frac{-27}{8}$ (b) $\frac{-8}{27}$ (c) $\frac{8}{27}$ (d) $\frac{27}{8}$
4. There are 21 boys and 15 girls in a classroom , one pupil is chosen randomly , the probability that the chosen pupil is a girl = ...
   (a) $\frac{5}{12}$ (b) $\frac{7}{12}$ (c) $\frac{4}{7}$ (d) $\frac{5}{6}$
5. $\sqrt{(-8)^2 + (-6)^2} =$ ....
   (a) $|-10|$ (b) ± 10 (c) 14 (d) -14
6. 10 % of L.E. $2\frac{1}{2}$ = L.E. ....
   (a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 1 (d) 25

3
[a] **Simplify to the simplest form :** $\left(-\frac{3}{7}\right)^0 \times \left(\frac{-2}{5}\right)^2 \times \sqrt{6\frac{1}{4}}$

[b] **Find the numerical value of the expression :**

$3\,a\,b + 8\,a \div (4\,b)$ when $a = 4$, $b = -2$

4 [a] Find in $\mathbb{Q}$ the S.S. of : $3X + 1 = 25$

[b] Find the value of : $\frac{8 \times 8^{-3}}{8^{-4}}$

5 [a] A factory of a tire record the distance that traveled by a certain type of them before damage for 800 units of this type as following.

The distance in thousand (km.)	Less than 50	50 to 100	More than 100 till 150	More than 150
The number of damage tire	80	120	280	320

If you bought a tyre of this type , what is the probability of change it :

1 Before traveled 50 thousand km.

2 After traveled more than 100 thousand km.

[b] Find in $\mathbb{Q}$ the S.S. of : $2X + 5 < 16$

Model 2

Answer the following questions :

1 Complete :

1 $\left(\frac{-2}{3}\right)^0 =$ ....   2 $\sqrt{\frac{16}{49}} =$ ....

3 The probability of the impossible event = ...

4 1 , 2 , 3 , 5 , 8 , ... , ... (In the same pattern)

5 If the probability that the student is absent in a school is 0.15 , if the number of students of this school is 600 , then the number of the present students that day is ....

2 Choose the correct answer :

1 $2^3 \times 2^3 =$ ....

(a) 2^6 (b) 2^8 (c) 2^{15} (d) 2^{53}

2 Which of the following is the greatest ?

(a) 2.3×10^4 (b) 2.3×10^5 (c) 3.2×10^4 (d) 3.2×10^5

3 $(x^2)^{-3} \times x^6 =$ ....

(a) x^{12} (b) x^{-12} (c) x (d) 1

4 Which of the following may be probability of an event ?

(a) – 0.35 (b) 87 % (c) 1.05 (d) 130 %

5 If $-x > 4$, then ....

(a) $x > -4$ (b) $x > 4$ (c) $x < -4$ (d) $x < 4$

6 Area of a rectangle of length 120 cm. and width 80 cm. equals .... m^2.

(a) 9600 (b) 400 (c) 9.6 (d) 0.96

3 [a] Two integers numbers , the smaller one is $2x$ and the greater is $5x$, if the difference between them is 30 Find the two numbers.

[b] Find the value of : $\frac{5^{-4} \times 5^7}{5^3}$ in the simplest form.

4 [a] Find in $\mathbb{Q}$ the S.S. of each of the following :

1 $(3x + 2) + 5 = 13$

2 $2x + 15 < 19$

[b] Find the value of the expression in the simplest form :

$$\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{3}{7}\right)^0$$

5 [a] If a regular die is thrown once and observed the number on upper face ,

find the probability of each of the following :

1 Getting a prime even number.

2 Getting an odd number less than 4

[b] If $x = -\frac{1}{2}$, $y = -\frac{3}{4}$, find in the simplest form : $\left(\frac{y}{x^2}\right)^{-2}$

Model examination for the merge students

Answer the following questions :

1 Choose the correct answer :

1 $\left(\frac{-2}{3}\right)^2 = \ldots\ldots$

(a) $\frac{4}{9}$ (b) $\frac{-4}{9}$ (c) $\frac{4}{6}$ (d) $\frac{-4}{6}$

2 $\left(\frac{4}{7}\right)^0 = \ldots\ldots$

(a) 0 (b) 1 (c) $\frac{4}{7}$ (d) -1

3 $2 \times 6 - 4 \times 2 = \ldots\ldots$

(a) 4 (b) 8 (c) 10 (d) 2

4 $(7)^{-2} = \ldots\ldots$

(a) 49 (b) $\frac{1}{49}$ (c) 14 (d) -14

5 $\sqrt{9 + 16} = \ldots\ldots$

(a) 7 (b) 5 (c) 25 (d) -7

2 Complete each of the following :

1 If $X + 2 = 6$, then $X = \ldots\ldots$

2 When tossing a coin once , then the probability of the appearance of a tail = ……

3 The probability of the impossible event = ……

4 $\sqrt{\left(\frac{2}{5}\right)^2} = \ldots\ldots$

5 $7\,(6^2 - 5 \times 6) = \ldots\ldots$

3 Complete the solution to find the result :

1 $12 \times 2^2 \div 24 + 3^2 = 12 \times \ldots\ldots \div 24 + \ldots\ldots$

$= \ldots\ldots \div 24 + \ldots\ldots = \ldots\ldots + \ldots\ldots = \ldots\ldots$

2 $\frac{8 + 20 - 4}{8 - 4} = \frac{\ldots\ldots - 4}{\ldots\ldots} = \frac{\ldots\ldots}{\ldots\ldots} = \ldots\ldots$

4 **Put (✓) or (✗) :**

1. If $2x + 3 = 7$, then $x = 2$ ( )
2. $\left(\frac{2}{3}\right)^2 \times \left(\frac{2}{3}\right)^5 = \left(\frac{2}{3}\right)^6$ ( )
3. $(x^2)^3 = x^6$ ( )
4. $\left(\frac{3}{2}\right)^2 = -\frac{9}{4}$ ( )
5. $\sqrt{100 - 64} = 2$ ( )

5 **A card is drawn randomly from 8 cards numbered from 1 to 8**

, join from column (A) to column (B) :

Column (A)	Column (B)
1 The event of getting an even number equals	• $\frac{1}{2}$
2 The probability of getting an even number equals	• $\{8 , 6 , 4 , 2\}$
3 The event of getting a number > 6 equals	• 1
4 The probability of getting a number < 9 equals	• $\frac{1}{8}$
5 The probability of getting a number 8 equals	• $\{8 , 7\}$

Schools Examinations on Algebra and Statistics

1 Cairo Governorate

Western Cairo Educational Zone
Mathematics Inspection

Answer the following questions :

1 Choose the correct answer from the given :

1. $\sqrt{9} = \dots\dots$
   (a) 3 (b) -3
   (c) ± 3 (d) 81
2. If the probability of success of a student is 0.8 , then the probability of his failure is $\dots\dots$
   (a) 1 (b) -1 (c) 0.2 (d) 0.8
3. $5^{-1} = \dots\dots$
   (a) -5 (b) $\frac{1}{5}$ (c) $-\frac{1}{5}$ (d) -15
4. If $x > y$, then $x + z \dots\dots y + z$
   (a) $<$ (b) $>$ (c) $=$ (d) $\leq$
5. $\frac{4}{10} + \frac{3}{100} = \dots\dots$
   (a) 0.34 (b) 0.43 (c) 4.3 (d) 3.4
6. $6000 \times 50 = \dots\dots$
   (a) 300×10^2 (b) 3×10^5 (c) 30×10^5 (d) -3×10^3

2 Complete each of the following :

1. The probability of the impossible event = $\dots\dots$
2. $(3^2)^{-1} = \dots\dots$
3. Twice the number $\frac{1}{2} = \dots\dots$
4. Quarter of the number 4^{20} is $4^{\dots}$
5. $3x + x + 2y + y$ in the simplest form is $\dots\dots$

3 [a] **Find in $\mathbb{Q}$ the S.S. of the equation : $2x + 1 = 9$**

[b] **Simplify to the simplest form : $\frac{5^4 \times 5^{-2}}{5^2}$**

[c] If $x = 6$, $y = 3$, then find the value of : $\left(\frac{x}{y}\right)^{-2}$

4 **[a] Find the S.S. of the following inequality in $\mathbb{Q}$: $4x - 3 < 7$**

[b] Find the value of : $12 \times 2 \div 24 + 9$

5 **[a] Find the value of the expression in the simplest form : $\left(-\frac{1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{3}{7}\right)^0$**

[b] A box contains 4 white , 5 red and 6 blue balls. A ball is drawn randomly from the box.

Calculate the probabilities of the following events :

1 The ball is red. 2 The ball is blue or white. 3 The ball is not blue.

2 Cairo Governorate

El-Zeiton Zone
Talaea Gaber El Antary Language School

Answer the following questions :

1 **Choose the correct answer :**

1 If $4x = 20$, then $3x - 1 =$ ....

(a) 13 (b) 14 (c) 15 (d) 16

2 $3^{10} + 3^{10} + 3^{10} =$ ....

(a) 9^{30} (b) 3^{30} (c) 3^{10} (d) 3^{11}

3 If $\frac{4x-1}{2x+3} = 0$ where $x \in \mathbb{Q}$, then $x =$ ....

(a) $-\frac{3}{2}$ (b) $\frac{2}{3}$ (c) $\frac{1}{4}$ (d) 0

4 A class contains 40 students , 36 of them are succeed in a test , then the probability of failed is ....

(a) 0.1 (b) 0.9 (c) 0.3 (d) $\frac{2}{3}$

5 $\sqrt{(8)^2 + (6)^2} = 8 +$ ....

(a) 14 (b) 10 (c) 2 (d) 6

6 $\frac{|-5|+1}{3}$ .... $\mathbb{Z}$

(a) $\in$ (b) $\notin$ (c) $\subset$ (d) $\not\subset$

2 **Complete the following :**

1 If $0.0000016 = 1.6 \times 10^n$, then n = ...

2 The multiplicative invers of $\sqrt{5\frac{4}{9}} =$ ....

3 When a fair die is tossed once , then the probability of getting an even prime number = ...

4 If $\frac{3}{4}x = 75$, then $\sqrt{x} =$ ....

5 25 % from .... = 8

3 [a] **Find in the simplest form :** $\left(\frac{5^5 \times 5^{-2}}{5^4}\right)^{-2}$

[b] **Find the S.S. in $\mathbb{Q}$:** $-2 < 4x + 1 < 6$

4 [a] **Simplify :** $\left(\frac{-2}{7}\right)^{-2} \times \sqrt{\frac{16}{49}} \times \left(\frac{-1}{7}\right)^0$

[b] If the length of a rectangle is 5 cm. more than its width and its perimeter is 42 cm. Find the area of this rectangle.

5 [a] **Simplify :** $\frac{(4x^3 y^2)^2}{(2x y^2)^3}$ where $x \neq 0$, $y \neq 0$, then find the value when $x = \frac{1}{2}$, $y = 3$

[b] A team plays 30 matches in national league its drawn probability is 0.2 and its win probability is 0.7 Calculate the number of loss matches.

3 Cairo Governorate

El Maadi Directorate
El Orman Smart School

Answer the following questions :

1 **Choose the correct answer :**

1 If $0 \in \{5 , x - 3\}$, then $x =$ ....

(a) 0 (b) -5 (c) 3 (d) -3

2 $3^4 \times 3^3 =$ ....

(a) 3^{12} (b) 3^7 (c) 3 (d) 3^{-1}

3 The S.S. of the inequality : $x < 3$ in $\mathbb{N}$ is ....

(a) $\{0\}$ (b) $\{0 , 1 , 2\}$ (c) $\{1 , 2\}$ (d) $\varnothing$

4 $\frac{6 a^3 x^4}{3 a^2 x^3} =$ .... where $a \neq 0$, $x \neq 0$

(a) $2 a x$ (b) $2 a^2 x^7$ (c) $\frac{3x}{a}$ (d) $\frac{3}{a x}$

5 $\left(\frac{-2}{3}\right)^{-3} =$ ....

(a) $\frac{27}{8}$ (b) $\frac{-8}{27}$ (c) $\frac{8}{27}$ (d) $\frac{-27}{8}$

6 If the probability of success of a student is 0.6 , then the probability of his failure is ....

(a) 1 (b) $\frac{1}{10}$ (c) $\frac{4}{10}$ (d) $\frac{6}{10}$

2 **Complete the following :**

1 The multiplicative inverse of 7 is ....

2 0.00025 in scientific notation = ...

3 $\left(\frac{3}{4}\right)^2 \div \left(\frac{3}{4}\right)^3 =$ ....

4 $\sqrt{16+9} = 4 +$ ....

5 A class has 36 pupils , 25 of them are boys , if a pupil is chosen randomly , then the probability that the pupil is a girl = ...

3 [a] **Find the simplest form of :** $\left(\frac{7^{-2} \times 7^5}{7^3}\right)^2$

[b] **Simplify and find the value of :** $\left(-\frac{3}{2}\right)^2 \times \sqrt{\frac{64}{9}} \times \left(\frac{2}{5}\right)^0$

4 [a] 1 **Calculate :** $\sqrt{100-(-8)^2}$

2 If $x = \frac{1}{2}$, $y = \frac{2}{3}$, **then find the value of :** $(x^2 y^2)^{-3}$

[b] **Find in $\mathbb{Q}$ the S.S. of the inequality :** $3x + 6 > 3$

5 [a] **Find the solution set in $\mathbb{Q}$:** $4x - 5 = 27$

[b] A fair die is rolled once. **Calculate the probability of appearance :**

1 an even number. 2 a number greater than 4

4 Giza Governorate

Mathe Inspection

Answer the following questions :

1 **Choose the correct answer from those given :**

1 $\left(\frac{2}{3}\right)^2 \times \frac{2}{3} =$ ....

(a) $\frac{4}{9}$ (b) $\frac{2}{3}$ (c) $\frac{-4}{9}$ (d) $\frac{8}{27}$

2 $5^{-1} =$ ....

(a) 5 (b) -5 (c) $\frac{-1}{5}$ (d) $\frac{1}{5}$

3 $\sqrt{\frac{4}{9}} =$ ....

(a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $\frac{2}{9}$ (d) $\frac{4}{3}$

4 Quarter of 16 = ...

(a) 1 (b) 4 (c) 8 (d) 16

5 The age of Omar is x year , then his age 5 years ago is ....

(a) $5x$ (b) $5 + x$ (c) $5 - x$ (d) $x - 5$

6 A letter is selected at random from the name (ZAMALEK) the probability of selecting the letter A is ....

(a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) $\frac{4}{7}$

2 Complete the following :

1 $\left(\frac{3}{4}\right)^4 \div \left(\frac{3}{4}\right)^3 =$ ....

2 $0.000735 =$ .... $\times$ .... (In standard form)

3 If $2x - 7 = 3$, then $x =$ ....

4 If a = b, then $\left(\frac{4}{5}\right)^{a-b} =$ ....

5 The probability of any event not less than .... and not more than ....

3 [a] Calculate the following :

1 $6 \times (2)^2 \div 24 + 3^2$

2 $\sqrt{100 - (-6)^2}$

[b] Find the result in the simplest form : 1 $\frac{7^{-2} \times 7^5}{7^3}$ 2 $\left(\left(\frac{1}{3}\right)^2\right)^2$

4 [a] Find in Q the S.S. of the following :

1 $x + 4 = 14$

2 $3x + 1 = 25$

[b] If $x = \frac{1}{2}$, $y = \frac{2}{3}$, $z = \frac{-3}{2}$, **then find the value of :** $(x y z)^2$

5 [a] Find in Q the S.S. of : $2x + 5 < 15$

[b] A box contains 3 white, 5 red and 7 blue balls, a ball is drawn randomly from the box.
Calculate the probabilities of the following :

1 The ball is red.

2 The ball is white or blue.

5 Giza Governorate

Dokki Zone
Talaee Islamic School

Answer the following questions :

1 Choose the correct answer from those given :

1 $3^3 \times 3^4 =$ ....

(a) 3^{12} (b) 3 (c) 3^7 (d) 3^{-1}

2 $3x^{-1} =$ .... where $x \neq 0$

(a) $-3x$ (b) $\frac{3}{x}$ (c) $3x$ (d) $\frac{1}{3x}$

3 The multiplicative inverse of the number $\sqrt{\frac{4}{9}}$ = ...

(a) $\frac{-3}{2}$ (b) $\frac{2}{3}$ (c) $-\frac{2}{3}$ (d) $\frac{3}{2}$

4 If $2a = \sqrt{9}\,b$, then $\frac{a}{b}$ = ...

(a) $\frac{3}{2}$ (b) $-\frac{2}{3}$ (c) $-\frac{3}{2}$ (d) $\frac{2}{3}$

5 If $-x < 2$, then ....

(a) $x > -2$ (b) $x > 2$ (c) $x < -2$ (d) $x < 2$

2 Complete each of the following :

1 $\sqrt{16+9} = 4 +$ ....

2 The additive inverse of $\left(-\frac{2}{3}\right)^2$ is ....

3 $3^5 + 3^5 + 3^5 = 3^{\cdots}$

4 $\frac{6a^2x^4}{2a^3x^3}$ = ... where $a \neq 0$, $x \neq 0$

5 $(2x)^2 \times \frac{1}{x}$ = ... where $x \neq 0$

6 $\left(2\sqrt{3}\right)^2$ = ...

3 Find in Q the solution set of the following :

1 $8x + 4 = 12$

2 $3x - 1 \leq 2x + 3$

4 [a] If the length of a rectangle exceeds its width by 4 metres and its perimeter is 108 metres. Find the dimentions of the rectangle.

[b] **Simplify :** $\frac{a^4 \times a^{-7}}{a^{-6}}$, $a \neq 0$

5 [a] **Write the following number in the standard form :** 0.75×10^8

[b] If $x = -\frac{1}{2}$, $y = \frac{3}{4}$, $z = -\frac{3}{2}$, **find the numerical value of :** $x^3 \div y z^2$

6 Giza Governorate

Omrania Directorate
El Sadat E.L.S

Answer the following questions :

1 Choose the correct answer :

1 $x^{12} \div x^4$ = ... where $x \neq 0$

(a) x^8 (b) x^3 (c) x^{16} (d) x^{-8}

2 $\pm\sqrt{\frac{4}{9}} = \dots\dots$

(a) $\frac{-4}{9}$ (b) $\frac{-2}{3}$ (c) $\pm\frac{2}{3}$ (d) $\frac{2}{3}$

3 If the probability that pupils success is 75 % , then the probability of his failure is ……

(a) – 0.75 (b) 0.25 (c) – 0.25 (d) 0.75

4 If $-x < 7$, then x …… -7

(a) < (b) > (c) = (d) ≤

5 $6000 \times 50 = \dots\dots$

(a) 300×10^2 (b) 30×10^5 (c) -3×10^3 (d) 3×10^5

6 If $3x = 6$, then $5x = \dots\dots$

(a) $\frac{5}{2}$ (b) $\frac{2}{5}$ (c) 10 (d) 5

2 Complete each of the following :

1 The probability of impossible event is ……

2 The additive inverse of the number $\left(\frac{-1}{3}\right)^2$ is ……

3 $\sqrt{16+9} = \dots\dots$

4 $\left(\frac{2}{5}\right)^{-2} = \dots\dots$

5 $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$, …… (in the same pattern)

3 [a] Find in the simplest from :

1 $\frac{9^{-2} \times 9^5}{9^3}$ 2 $\left(\frac{-3}{2}\right)^2 \times \sqrt{\frac{64}{9}} \times \left(\frac{5}{2}\right)^0$

[b] Find in $\mathbb{Q}$ the solution set of the following equation : $4x + 1 = 21$

4 [a] If $x = \frac{1}{2}$, $y = \frac{2}{3}$, $z = \frac{-3}{2}$, then find the value of : $(x\,y\,z)^2$

[b] Find in $\mathbb{Q}$ the solution set of the following inequality : $3x - 1 \le 2x + 3$

5 [a] The sum of three consecutive numbers is 24 , find them.

[b] A fair die is rolled once , **calculate the probability of appearance :**

1 An even number. 2 A number greater than 5

7 Alexandria Governorate

West Educational Zone
Inspectorate of Mathematics

Answer the following questions :

1 Complete each of the following :

1 The multiplicative identity element in $\mathbb{Q}$ is ....

2 $\sqrt{\frac{25}{49}}$ = ...

3 $(x-5)^0 = 1$, if $x \neq$ ....

4 If the probability of success of a student is 0.8 , then the probability of his failure is ....

5 If $X \subset Y$, then $X \cap Y$ = ...

2 Choose the correct answer :

1 $\sqrt{64+36} = 8 +$ ....

(a) 2 (b) 6 (c) 10 (d) -2

2 Half the number 2^{24} equals ....

(a) 2^{12} (b) 1^{23} (c) 2^{23} (d) 1^{12}

3 0.0000068 = ...

(a) 6.8×10^{-6} (b) 6.8×10^{5} (c) 6.8×10^{-7} (d) 6.8×10^{7}

4 If $2x = -12$, then x^2 = ...

(a) 6 (b) 144 (c) -36 (d) 36

5 The S.S. of the equation : $5 - x = 3$ in $\mathbb{Q}$ is ....

(a) $\{2\}$ (b) $\{-2\}$ (c) $\{7\}$ (d) $\varnothing$

6 The probability of a certain event equals ....

(a) zero (b) 1 (c) -1 (d) $\frac{1}{2}$

3 [a] Simplify to the simplest form : $\frac{x^3 \times x^{-2}}{x^{-5} \times x}$, then find the value when $x = -2$

[b] Find the S.S. in $\mathbb{Q}$ for each of the following :

1 $3x - 5 > 1$ 2 $3x + 6 = 30 - 5x$

4 [a] A fair die is rolled once , what is the probability of getting :

1 an even number ? 2 a factor of 6 ?

[b] Find the value of : $\sqrt{6\frac{1}{4}} \times \left(\frac{2}{7}\right)^0 \times \left(\frac{-2}{5}\right)^2$

5 [a] A rectangle whose length is more than its width by 3 cm. and its perimeter equals 26 cm. , find its area.

[b] If $x = \frac{1}{2}$ and $y = \frac{4}{3}$ find the value of : $x^3 y^2$

8 Alexandria Governorate

Mid Educational Zone
Math Inspection

Answer the following questions :

1 **Choose the correct answer :**

1. $x^9 \div x^3 =$ .... , $x \neq 0$
   (a) x^{12} (b) x^3 (c) x^6 (d) x^{-3}
2. If $0.0035 = 3.5 \times 10^n$, then n = ...
   (a) 2 (b) -3 (c) -2 (d) 3
3. $\left(\frac{4}{7}\right)^0 =$ ....
   (a) 1 (b) $\frac{4}{7}$ (c) 0 (d) -1
4. $5^2 + 5^2 =$ ....
   (a) 10^4 (b) 50 (c) 5^4 (d) 10^2
5. If $-x > 4$, then ....
   (a) $x > -4$ (b) $x < 4$ (c) $x > 4$ (d) $x < -4$
6. The sum of all probabilities of all possible events of a random experiment ....
   (a) = 0 (b) = 1 (c) > 1 (d) < 1

2 **Complete each of the following :**

1. The probability of the certain event = ...
2. 1 , 2 , 3 , 5 , 8 , ... (in the same pattern)
3. $(a^2)^4 =$ ....
4. $\sqrt{9 + 16} =$ ....
5. $2 \times 6 - 4 \div 2 =$ ....

3 **Find in the simplest form :**

1. $\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{3}{7}\right)^0$
2. $\frac{7^{-2} \times 7^7}{7^3}$

4 [a] Find in $\mathbb{Q}$ the solution set of : $3x + 1 = 25$

[b] If $x = \frac{3}{2}$, $y = \frac{4}{3}$, find the value of : $x^2 y^2$

5 **[a] Find in $\mathbb{Q}$ the solution set of :** $2x + 15 < 19$

[b] A bag contains 5 red , 3 yellow and 2 black balls. A ball is drawn randomly from the box.
Calculate the probability of getting :

1 A yellow ball. 2 A green ball.

9 El-Kalyoubia Governorate

Directorate of Education
Math Supervision

Answer the following questions :

1 **Choose the correct answer :**

1 The number which is not in the standard form is ....

(a) 6.2×10^5 (b) 7.834×10^{16} (c) 0.8×10^5 (d) 6.7×10^{25}

2 If $3t = 6$, then $6t =$ ....

(a) 16 (b) 14 (c) 12 (d) 10

3 $\frac{1}{4} \times 4^{20} =$ ....

(a) 4^{15} (b) 4^{19} (c) 2^{19} (d) 2^{39}

4 $\frac{6a^2x^4}{2a^3x^3} =$ .... where $a \neq 0$, $x \neq 0$

(a) $3ax$ (b) $3a^5x^7$ (c) $\frac{3x}{a}$ (d) $\frac{3}{ax}$

5 A class formed from 36 students , 16 of them are girls. If a student selected randomly from the class , then the probability that the student is a boy = ...

(a) $\frac{4}{9}$ (b) $\frac{5}{9}$ (c) $\frac{1}{2}$ (d) $\frac{1}{36}$

6 10 % of $2\frac{1}{2}$ L.E. = ... L.E.

(a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) 1 (d) 25

2 **Complete :**

1 The additive inverse of $\left(\frac{-2}{3}\right)^4$ is ....

2 When a die is tossing twice and observed the upper face in each time the probability of appearance number 5 on the two faces is ....

3 $\sqrt{10^2 - 6^2} =$ ....

4 If $-x + 2 > 6$ and the substitution set $= \{-2 , -5 , -1\}$, then $x =$ ....

5 If $3a = \sqrt{4}\, b$, then $\frac{a}{b} =$ ....

3 [a] Find in the simplest form : $\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{a}{b}\right)^0$ where $a \neq 0$, $b \neq 0$

[b] If $x = \frac{-1}{2}$, $y = \frac{-3}{4}$, find the value of : $\left(\frac{y}{x}\right)^{-2}$

4 Find in $\mathbb{Q}$ the S.S. of :

1. $3x + 1 = 25$
2. $15 + 2x < 1$

5 [a] Find with steps the value of : $\left(2 \times \sqrt{36} - 2^4\right) \div 4$

[b] If a regular die is thrown once and observing the number on the upper face

Find the probability of getting :

1. a prime even number.
2. an odd number less than 4

10 El-Kalyoubia Governorate

Math's Supervision

Answer the following questions :

1 Choose the correct answer :

1. The side length of a square whose area $9x^2$ is ....
   (a) $3x$ (b) $3x^2$ (c) $9x$ (d) $9x^2$
2. $\left(\frac{-2}{3}\right)^{-3}$ = ...
   (a) $\frac{-27}{8}$ (b) $\frac{-8}{27}$ (c) $\frac{8}{27}$ (d) $\frac{27}{8}$
3. $2^3 \times 2^3$ = ...
   (a) 1 (b) 2^9 (c) 2^4 (d) 2^6
4. $\sqrt{9 + 16}$ = ...
   (a) 7 (b) 5 (c) 25 (d) -7
5. If $-x > 4$, then ....
   (a) $x > -4$ (b) $x > 4$ (c) $x < 4$ (d) $x < -4$
6. There are 21 boys and 15 girls in a classroom , one pupil is chosen randomly , then the probability that the chosen pupil is a girl = ...
   (a) $\frac{5}{12}$ (b) $\frac{7}{12}$ (c) $\frac{4}{7}$ (d) $\frac{5}{6}$

2 Complete :

1. $7 (6^2 - 5 \times 6)$ = ...
2. 1 , 2 , 3 , 5 , 8 , ... , ... (in the same pattern).

3 The additive inverse of $\left(\frac{-2}{5}\right)^2$ is ....

4 $\left(\frac{-2}{5}\right)^{zero}$ = ...

5 The probability of the certain event = ...

3 **[a] Simplify to the simplest form :** $\left(\frac{-3}{7}\right)^0 \times \left(\frac{-2}{5}\right)^2 \times \sqrt{6\frac{1}{4}}$

[b] Write the following number in the standard form 720×10^6

4 **[a] Find in $\mathbb{Q}$ the S.S. of :** $2x + 15 < 19$

[b] Simplify to the simplest form : $\frac{5^{-4} \times 5^7}{5^3}$

5 **[a] Find in $\mathbb{Q}$ the S.S. of :** $3x + 1 = 25$

[b] The set $\{2, 3, 5\}$ is used in writing a 2-digit number.

Find the probability of the following events :

1 The tens digit is odd. 2 The units digit is even.

11 El-Monofia Governorate

Shiben Elkom Educational Zone
Language Formal Schools

Answer the following questions :

1 **Choose the correct answer :**

1 The S.S. of the inequality : $x < 2$ in $\mathbb{N}$ is ....

(a) $\{0\}$ (b) $\{1\}$ (c) $\{0, 1\}$ (d) $\varnothing$

2 $3^{10} + 3^{10} + 3^{10}$ = ...

(a) 3^{10} (b) 3^{30} (c) 9^{10} (d) 3^{11}

3 $\sqrt{(-8)^2 + (-6)^2}$ = ...

(a) $|-10|$ (b) ± 10 (c) 14 (d) -14

4 $\frac{6a^2x^4}{2a^3x^3}$ = ... where $ax \neq 0$

(a) $3ax^2$ (b) $3a^5x^7$ (c) $\frac{3x}{a}$ (d) $\frac{3}{ax}$

5 Which of the following is the greatest ?

(a) 2.3×10^4 (b) 2.3×10^5 (c) 3.2×10^4 (d) 3.2×10^5

6 $2 \times 6 - 4 \div 2$ = ...

(a) 10 (b) 2 (c) 12 (d) 6

2 **Complete the following :**

1. A class has 36 pupils , 20 of them are boys. If a pupil is chosen randomly , then the probability that the pupil is a girl = ...
2. If $7 - 2X = 3$, then $3X =$ ....
3. $2\frac{1}{4} = \left(\frac{-3}{2}\right)^{\cdots\cdots}$
4. $\sqrt{100 - 64} = 10 -$ ....
5. The standard form of the number $0.7 \times 0.005 =$ ....

3 **[a] Find in $\mathbb{Q}$ the S.S. of the inequality :** $3X + 5 > 2$

[b] Find in $\mathbb{Q}$ the S.S. of the equation : $3X - 4 = 2X + 5$

4 **[a] Find the value of :** $12 \times (2)^2 \div 24 + 3^2$

[b] Find in the simplest form : $\left(\frac{7^4 \times 7^{-2}}{7^3}\right)^{-2}$

5 **[a] Simplify to the simplest form :** $\left(\frac{-5}{3}\right)^2 \times \left(\frac{-4}{9}\right)^0 \times \sqrt{3\frac{6}{25}}$

[b] The set $\{2 , 3 , 5\}$ is used in writing a 2-digit number.

Find the probability of each of the following events :

1. The sum of the two digits is 7
2. Both digits are equal.

12 El-Dakahlia Governorate

Dakahlia Directorate of Education
Math supervision

Answer the following questions :

1 **Choose the correct answer from those given :**

1. The additive inverse of $(-1)^{10}$ is ....

   (a) 0 (b) -1 (c) -10 (d) 1

2. Half milliard $= 5 \times 10^{\cdots\cdots}$

   (a) 6 (b) -9 (c) 8 (d) 9

3. Quarter of the number 2^{16} is ....

   (a) 1^{16} (b) 4^7 (c) 4^{15} (d) 2^4

4. $\sqrt{144 + \cdots} = 12 + 5$

   (a) 40 (b) 25 (c) 16 (d) 145

5 If the probability of success of a student is 0.7 , then the probability of his failure is ....

(a) 0.03 (b) 1 (c) 30 % (d) 3

6 If 8 y = 16 , then y + 5 = ...

(a) 10 (b) 13 (c) 21 (d) 7

2 Complete each of the following :

1 The smallest odd prime number is ....

2 If the area of a square is 169 k^2 cm^2 , then its side length = ... cm.

3 If $y = \frac{1}{4}$, $x = \frac{1}{3}$, then $(x - y)^{-2}$ = ...

4 .... is a subset of the sample space.

5 The S.S. of the inequality $5 \le x \le 6$ in $\mathbb{N}$ is ....

3 [a] **Divide :** $(25\,a\,b + 5\,a) \div 5\,a$ where $a \ne 0$, then find the numerical value of the expression when a = 2 , b = − 1

[b] **Simplify to the simplest form :** $\left(-\frac{49}{25}\right)^0 \times \left(\frac{-2}{7}\right)^2 \times \sqrt{12\frac{1}{4}}$

4 [a] **Find in $\mathbb{Q}$ the S.S. of the following :**

1 $2x + 7 < 15$

2 $6x + 6 = 6$

[b] **Simplify to the simplest form :** $\frac{(3)^{-6} \times (3)^{11}}{(3)^3}$

5 [a] **Find in $\mathbb{N}$ the S.S. of the inequality :** $5x - 2 \ge 3$, then represent it on the number line.

[b] A ball chosen randomly from a bag contains 5 red balls , 7 blue balls , 3 yellow balls , **find the probability of each of the following :**

1 getting black ball.

2 getting a red ball.

13 Port Said Governorate

Educational Directorate
Math Inspection

Answer the following questions :

1 Choose the correct answer :

1 $6 \times 2 - 4 \div 2$ = ...

(a) 1 (b) 2 (c) 10 (d) 12

2 $|-3|+|5|=$ ....

(a) -8 (b) -2 (c) 2 (d) 8

3 There are 21 boys and 15 girls in a classroom , one pupil is chosen randomly , the probability that the chosen pupil is a girl = ...

(a) $\frac{5}{12}$ (b) $\frac{7}{12}$ (c) $\frac{4}{7}$ (d) $\frac{5}{6}$

4 The S.S. of the inequality : $x < 0$ in $\mathbb{N}$ is ....

(a) $\{0\}$ (b) $\{1\}$ (c) $\{0 , 1\}$ (d) $\varnothing$

5 Quarter of 4^{20} = ...

(a) 4^5 (b) 4^{10} (c) 4^{19} (d) 2^{10}

6 $\frac{6 a^2 x^4}{2 a^3 x^3}$ = ... where $a \neq 0$, $x \neq 0$

(a) $3 a x$ (b) $3 a^5 x^7$ (c) $\frac{3 x}{a}$ (d) $\frac{3}{a x}$

2 Complete :

1 $\sqrt{16+9} = 2 +$ ....

2 $10^{-3} = \frac{1}{\text{..............}}$

3 The probability of the impossible event = ...

4 1 , 8 , 27 , ... (in the same pattern).

5 The multiplicative inverse of 7 is ....

3

[a] Solve : $x + 2 = 8$ in $\mathbb{Z}$

[b] Evaluate : $\frac{7^{-2} \times 7^5}{7^3}$

4

[a] Find the S.S. in $\mathbb{Q}$: $3 x - 1 \leq 2 x + 3$

[b] Find the value of the expression in the simplest form : $\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{3}{7}\right)^0$

5

[a] A fair die is rolled once , calculate the probability of getting :

1 An even number.

2 A prime number.

3 A number greater than 3

[b] If $x = 3$ find the numerical value of the expression : $2\left(\frac{5 x + 3}{4 x - 3}\right)$

14 Damietta Governorate

Damietta inspection of Mathematic official language schools

Answer the following questions :

1 Choose the correct answer :

1 If $x + 9 = 11$, then the value of $7x =$ ....

(a) 9 (b) 14 (c) 2 (d) 13

2 $\left(\frac{-2}{3}\right)^{-3} =$ ....

(a) $\frac{-27}{8}$ (b) $\frac{-8}{27}$ (c) $\frac{8}{27}$ (d) $\frac{27}{8}$

3 $2^3 + 2^3 =$ ....

(a) 2^6 (b) 2^4 (c) 2^9 (d) 1

4 If $-x > 4$, then ....

(a) $x > -4$ (b) $x > 4$ (c) $x < -4$ (d) $x < 4$

5 $x^2 + x^2 =$ ....

(a) x^4 (b) x^2 (c) $2x^2$ (d) $2x^4$

6 Three times of a number is 48 , then $\frac{1}{4}$ the number is ....

(a) 16 (b) 4 (c) 12 (d) 8

2 Complete each the following :

1 The probability of the certain event equals ....

2 The number 0.000053 in the scientific notation = ...

3 The multiplicative inverse of $\sqrt{\frac{9}{25}}$ is ....

4 A class has 36 pupils , 20 of them are boys. If a pupil is chosen randomly , then the probability that the pupil is a girl = ...

5 1 , 2 , 3 , 5 , 8 , ... (in the same pattern).

3

[a] Simplify to the simplest form : $\left(\frac{-5}{3}\right)^2 \times \left(\frac{-4}{9}\right)^0 \times \sqrt{3\frac{6}{25}}$

[b] Find the solution set of each of the following where $x \in \mathbb{Q}$:

1 $3x + 1 > 25$ 2 $5x + 8 = 15 - 2x$

4

[a] Reduce : $\frac{x^7 \times x^9}{x^6 \times x^8}$ to the simplest form , then find the value of the result when : $x = -3$

[b] The sum of three consecutive even numbers is 60 , find them.

5 [a] If $x = 3$ and $y = -4$, **find the value of :** $\sqrt{x^2 + y^2}$

[b] A box contains 4 white , 5 red and 6 blue balls , a ball is drawn randomly from the box. **Calculate the probability of getting :**

1. a blue ball.
2. a white or red ball.
3. a green ball.

15 El-Fayoum Governorate

Directorate of Education

Answer the following questions : **(Calculator is allowed)**

1 **Choose the correct answer :**

1. The multiplicative inverse of $\sqrt{\frac{100}{36}}$ = ...
   (a) $\pm \frac{10}{6}$ (b) $\pm \frac{6}{10}$ (c) $\frac{10}{6}$ (d) $\frac{6}{10}$
2. The probability of the certain event = ...
   (a) zero (b) 1 (c) $\frac{1}{2}$ (d) $\frac{1}{3}$
3. If a = b , then : $\left(\frac{2}{3}\right)^{(a-b)}$ = ...
   (a) zero (b) 1 (c) $\frac{2}{3}$ (d) $\frac{3}{2}$
4. $3^{10} + 3^{10} + 3^{10}$ = ...
   (a) 3^{30} (b) 3^{11} (c) 9^{10} (d) 9^{11}
5. If $3x + 1 = 16$, then the value of $5x$ = ...
   (a) 10 (b) 15 (c) 25 (d) 26
6. 5^{-1} = ...
   (a) -5 (b) 25 (c) 5 (d) $\frac{1}{5}$

2 **Complete the following :**

1. The probability of the impossible event = ...
2. $(3 \times 10^2) \times (15 \times 10^3)$ = ... in the standard form.
3. If $\frac{x}{5} = 30\%$, then x = ...
4. $\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{8}$, $\frac{7}{16}$, ... , ... (in the same pattern)
5. If $x = \frac{1}{2}$, $y = \frac{3}{4}$, then $y \div x$ = ...

3 **[a] Write the following in the simplest form :** $\frac{7^{-3} \times 7^{6}}{7^{2}}$

[b] Find in ℚ the solution set of the following : $8 + 2\,X = 14$

4 **[a] Find the result of the following :** $10 \times 4 - (2 \times 6 - 8)$

[b] Calculate the following when : $a = 2$, $b = 5$

1. $\frac{b - a}{b^{3}}$
2. $\frac{a^{2}}{b - 1}$

5 **[a]** A box contains 15 cards numbered from 1 to 15 , a card is drawn randomly **, find the probability of :**

1. The drawn card carries a prime number.
2. The drawn card carries a number divisible by 3

[b] Find in ℚ the solution set of the following : $3\,X - 4 \geq -10$

Answers of school book models on Algebra and Statistics

Model 1

1

1 -2 2 2 3 $\frac{7}{12}$ 4 3.5×10^{-3} 5 1

2

1 (b) 2 (a) 3 (a) 4 (a) 5 (a) 6 (a)

3 [a] $1 \times \frac{4}{25} \times \sqrt{\frac{25}{4}} = 1 \times \frac{4}{25} \times \frac{5}{2} = \frac{2}{5}$

[b] $3\,ab + 8\,a \div (4\,b)$

$= 3 \times 4 \times (-2) + 8 \times 4 \div (4 \times -2)$

$= -24 + 32 \div (-8)$

$= -24 - 4 = -28$

4

[a] $\because 3x + 1 = 25$ $\therefore 3x = 24$

$\therefore x = 8$ $\therefore$ The S.S. $= \{8\}$

[b] $\frac{8 \times 8^{-3}}{8^{-4}} = 8^{1-3+4} = 8^2 = 64$

5

[a] 1 The probability of change it before travelled 50 thousand km. $= \frac{80}{800} = \frac{1}{10}$

2 The probability of change it after travelled more than 100 thousand km. $= \frac{600}{800} = \frac{3}{4}$

[b] $\because 2x + 5 < 16$ $\therefore 2x < 11$

$\therefore x < \frac{11}{2}$

$\therefore$ The S.S. $= \{x : x \in \mathbb{Q} , x < \frac{11}{2}\}$

Model 2

1

1 1 2 $\frac{4}{7}$ 3 zero

4 $13 , 21$ 5 510 students

2

1 (a) 2 (d) 3 (d) 4 (b) 5 (c) 6 (d)

3 [a] $\because 5x - 2x = 30$ $\therefore 3x = 30$ $\therefore x = 10$

$\therefore$ The two numbers are : 20 , 50

[b] $\frac{5^{-4} \times 5^7}{5^3} = 5^{-4+7-3} = 5^0 = 1$

4

[a] 1 $\because 3x + 7 = 13$ $\therefore 3x = 6$

$\therefore x = 2$ $\therefore$ The S.S. $= \{2\}$

2 $\because 2x + 15 < 19$ $\therefore 2x < 4$

$\therefore x < 2$

$\therefore$ The S.S. $= \{x : x \in \mathbb{Q} , x < 2\}$

[b] $\frac{1}{9} + \frac{8}{9} - 1 = 1 - 1 =$ zero

5

[a] 1 The probability of getting a prime even number $= \frac{1}{6}$

2 The probability of getting an odd number less than 4 $= \frac{2}{6} = \frac{1}{3}$

[b] $\left(\frac{y}{x^2}\right)^{-2} = \left[\frac{\frac{-3}{4}}{\left(\frac{-1}{2}\right)^2}\right]^{-2} = \left(\frac{\frac{-3}{4}}{\frac{1}{4}}\right)^{-2} = (-3)^{-2}$

$= \frac{1}{(-3)^2} = \frac{1}{9}$

Model examination for the merge students

1 1 a 2 b 3 a

4 b 5 b

2 1 4 2 $\frac{1}{2}$ 3 zero

4 $\frac{2}{5}$ 5 42

3 1 $12 \times 2^2 \div 24 + 3^2 = 12 \times 4 \div 24 + 9$

$= 48 \div 24 + 9 = 2 + 9 = 11$

2 $\frac{8 + 20 - 4}{8 - 4} = \frac{28 - 4}{4} = \frac{24}{4} = 6$

4 1 ✔ 2 ✘ 3 ✔

4 ✘ 5 ✘

5 1 $\{8 , 6 , 4 , 2\}$ 2 $\frac{1}{2}$

3 $\{8 , 7\}$ 4 1 5 $\frac{1}{8}$

Answers of schools examinations on Algebra and Statistics

1 Cairo

1
1. b 2. d 3. c
4. a 5. c 6. b

2
1. $\left|\frac{5xy}{6}\right|$ 2. $\{-13\}$ 3. $-\frac{4}{25}$
4. 1 5. -3

3

[a] $x^2 y^2 z^2 = \left(\frac{-3}{2}\right)^2 \times \left(\frac{1}{2}\right)^2 \times \left(\frac{-4}{3}\right)^2$

$= \frac{9}{4} \times \frac{1}{4} \times \frac{16}{9} = 1$

[b] $\because 5x + 8 = 13 - 2x$ $\therefore 5x + 2x = 13 - 8$

$\therefore 7x = 5$ $\therefore x = \frac{5}{7}$

$\therefore$ The S.S. $= \left\{\frac{5}{7}\right\}$

4

[a] $\because 3x - 1 \le 5$

$\therefore 3x \le 6$ $\therefore x \le 2$

$\therefore$ The S.S. $= \{x : x \in \mathbb{Q}, x \le 2\}$

[b] $\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{3}{7}\right)^0 = \frac{1}{9} + \frac{8}{9} - 1 = 0$

5

[a] 1. The probability that the ball is red $= \frac{5}{15} = \frac{1}{3}$

2. The probability that the ball is black $= \frac{0}{15} = 0$

3. The probability that the ball is white or blue

$= \frac{4+6}{15} = \frac{10}{15} = \frac{2}{3}$

[b] Let the two numbers be : x and $2x$

$\therefore x + 2x = 24$ $\therefore 3x = 24$ $\therefore x = 8$

$\therefore$ The two numbers are : 8 , 16

2 Cairo

1
1. c 2. b 3. b
4. a 5. d 6. c

2
1. $\frac{1}{7}$ 2. 2.5×10^{-4} 3. $\frac{4}{3}$
4. 1 5. $\frac{11}{36}$

3

[a] $\left(\frac{7^{-2} \times 7^5}{7^3}\right)^2 = \left(7^{-2+5-3}\right)^2 = (7^0)^2 = (1)^2 = 1$

[b] $\left(\frac{-3}{2}\right)^2 \times \sqrt{\frac{64}{9}} \times \left(\frac{2}{5}\right)^0 = \frac{9}{4} \times \frac{8}{3} \times 1 = 6$

[c] $12 \times 2^2 \div 24 + 3^2 = 12 \times 4 \div 24 + 9$

$= 48 \div 24 + 9 = 2 + 9 = 11$

4

[a] 1. $\sqrt{100 - (-8)^2} = \sqrt{100 - 64} = \sqrt{36} = 6$

2. $(x^2 y^2)^{-3} = \left[\left(\frac{1}{2}\right)^2 \times \left(\frac{2}{3}\right)^2\right]^{-3}$

$= \left[\frac{1}{4} \times \frac{4}{9}\right]^{-3} = \left(\frac{1}{9}\right)^{-3} = (9)^3 = 729$

[b] $\because 3x + 6 > 3$ $\therefore 3x > -3$ $\therefore x > -1$

$\therefore$ The S.S. $= \{x : x \in \mathbb{Q}, x > -1\}$

5

[a] $\because 4x - 5 = 27$ $\therefore 4x = 32$

$\therefore x = 8$

$\therefore$ The S.S. $= \{8\}$

[b] 1. The probability of appearance of an even number $= \frac{3}{6} = \frac{1}{2}$

2. The probability of appearance of a number greater than 4 $= \frac{2}{6} = \frac{1}{3}$

3 Cairo

1
1. b 2. d 3. c
4. a 5. c 6. a

2
1. -6 2. $\frac{3}{7}$ 3. $\frac{1}{6}$
4. 10 5. 32

3

[a] $\left(\frac{5^5 \times 5^{-2}}{5^4}\right)^{-2} = \left(5^{5-2-4}\right)^{-2} = (5^{-1})^{-2} = 5^2 = 25$

[b] $\because -2 < 4x + 1 < 6$ $\therefore -3 < 4x < 5$

$\therefore \frac{-3}{4} < x < \frac{5}{4}$

$\therefore$ The S.S. $= \left\{x : x \in \mathbb{Q}, \frac{-3}{4} < x < \frac{5}{4}\right\}$

4

[a] $\left(\frac{-2}{7}\right)^{-2} \times \sqrt{\frac{16}{49}} \times \left(\frac{-1}{7}\right)^{0} = \frac{49}{4} \times \frac{4}{7} \times 1 = 7$

[b] Let the length of the rectangle be : X cm.

∴ The width = $(X - 5)$ cm.

∴ $2(X + X - 5) = 42$

∴ $2X - 5 = 21$ ∴ $2X = 26$ ∴ $X = 13$

∴ The length = 13 cm.

, the width = 8 cm.

∴ The area of rectangle = $13 \times 8 = 104$ cm^2.

5

[a] $\frac{(4X^3y^2)^2}{(2Xy^2)^3} = \frac{16X^6y^4}{8X^3y^6} = \frac{2X^3}{y^2}$

At $X = \frac{1}{2}$, $y = 3$

The result $= 2 \times \left(\frac{1}{2}\right)^3 \div 3^2 = 2 \times \frac{1}{8} \div 9$

$= \frac{1}{4} \times \frac{1}{9} = \frac{1}{36}$

[b] ∵ The probability of its loss = $1 - (0.2 + 0.7) = 0.1$

∴ The number of loss matches = 0.1×30

= 3 matches

4 Giza

1

1 d 2 b 3 a

4 b 5 c 6 c

2

1 6 2 $\frac{4}{9}$ 3 5

4 16 5 1

3

[a] $\left(\frac{-5}{7}\right)^{0} \times \left(\frac{-3}{2}\right)^{2} \times \sqrt{\frac{16}{9}} = 1 \times \frac{9}{4} \times \frac{4}{3} = 3$

[b] $(4.4 \times 10^3) \times (3 \times 10^5) = (4.4 \times 3) \times (10^3 \times 10^5)$

$= 13.2 \times 10^8 = 1.32 \times 10^9$

4

[a] ∵ $3X + 1 = 25$ ∴ $3X = 24$

∴ $X = 8$ ∴ The S.S. = $\{8\}$

[b] $\frac{3^{-4} \times 3^7}{3^3} = 3^{-4+7-3} = 3^0 = 1$

5

[a] ∵ $2X + 5 < 9$ ∴ $2X < 4$

∴ $X < 2$

∴ The S.S. = $\{X : X \in \mathbb{Q} , X < 2\}$

[b] S = $\{1 , 2 , 3 , 4 , 5 , 6\}$

1 The probability of getting a number greater than 6 = $\frac{0}{6} = 0$

2 The probability of getting a number satisfies the inequality $1 < X < 6$ is $\frac{4}{6} = \frac{2}{3}$

3 The probability of getting a number divisible by 3 = $\frac{2}{6} = \frac{1}{3}$

5 Giza

1

1 a 2 c 3 b

4 b 5 d 6 c

2

1 zero 2 $\frac{-1}{9}$ 3 5

4 $\frac{25}{4}$ 5 $\frac{5}{6}$

3

[a] 1 $\frac{9^{-2} \times 9^5}{9^3} = 9^{-2+5-3} = 9^0 = 1$

2 $\left(\frac{-3}{2}\right)^{2} \times \sqrt{\frac{64}{9}} \times \left(\frac{5}{2}\right)^{0} = \frac{9}{4} \times \frac{8}{3} \times 1 = 6$

[b] ∵ $4X + 1 = 21$ ∴ $4X = 20$

∴ $X = 5$ ∴ The S.S. = $\{5\}$

4

[a] $(Xyz)^2 = \left(\frac{1}{2} \times \frac{2}{3} \times \frac{-3}{2}\right)^2 = \left(\frac{-1}{2}\right)^2 = \frac{1}{4}$

[b] ∵ $3X - 1 \le 2X + 3$ ∴ $3X - 2X \le 3 + 1$

∴ $X \le 4$

∴ The S.S. = $\{X : X \in \mathbb{Q} , X \le 4\}$

5

[a] Let the numbers be : X , $X + 1$, $X + 2$

∴ $X + X + 1 + X + 2 = 24$

∴ $3X + 3 = 24$ ∴ $3X = 21$

∴ $X = 7$

∴ The numbers are : 7 , 8 , 9

[b] 1 The probability of appearance of an even number = $\frac{3}{6} = \frac{1}{2}$

2 The probability of appearance of a number greater than 5 = $\frac{1}{6}$

6 Alexandria

1
1) 1 2) $\frac{5}{7}$ 3) 5
4) 0.2 5) x

2
1) a 2) c 3) a
4) d 5) a 6) b

3

[a] $\frac{x^3 \times x^{-2}}{x^{-5} \times x} = x^{3-2+5-1} = x^5$ at $x = -2$

$\therefore x^5 = (-2)^5 = -32$

[b] 1) $\because 3x - 5 > 1 \quad \therefore 3x > 6$

$\therefore x > 2$

$\therefore$ The S.S. $= \{x : x \in \mathbb{Q} , x > 2\}$

2) $\because 3x + 6 = 30 - 5x$

$\therefore 3x + 5x = 30 - 6$

$\therefore 8x = 24 \quad \therefore x = 3$

$\therefore$ The S.S. $= \{3\}$

4

[a] 1) The probability of getting an even number $= \frac{3}{6} = \frac{1}{2}$

2) The probability of getting a number is a factor of 6 $= \frac{4}{6} = \frac{2}{3}$

[b] $\sqrt{6\frac{1}{4}} \times \left(\frac{2}{7}\right)^{zero} \times \left(\frac{-2}{5}\right)^2 = \sqrt{\frac{25}{4}} \times 1 \times \frac{4}{25}$

$= \frac{5}{2} \times 1 \times \frac{4}{25} = \frac{2}{5}$

5

[a] Let the width be x cm. and the length be $(x + 3)$ cm.

$\therefore 2(x + 3 + x) = 26$

$\therefore 2x + 3 = 13 \quad \therefore 2x = 10$

$\therefore x = 5 \quad \therefore$ The length = 8 cm.

and the width = 5 cm.

$\therefore$ The area $= 8 \times 5 = 40 \text{ cm}^2$.

[b] $x^3 y^2 = \left(\frac{1}{2}\right)^3 \times \left(\frac{4}{3}\right)^2 = \frac{1}{8} \times \frac{16}{9} = \frac{2}{9}$

7 Alexandria

1
1) b 2) b 3) c
4) c 5) a 6) c

2
1) 1 2) -4 3) $\frac{-4}{9}$
4) 1 5) 2^{11}

3

[a] 1) $\because 3x + 1 = 16 \quad \therefore 3x = 15$

$\therefore x = 5 \quad \therefore$ The S.S. $= \{5\}$

2) $\because 7x - 1 < 13 \quad \therefore 7x < 14$

$\therefore x < 2$

$\therefore$ The S.S. $= \{x : x \in \mathbb{Q} , x < 2\}$

[b] $5^2 + [3 \times 8 \div 2^2 - 2 \times 3] = 25 + [24 \div 4 - 6]$

$= 25 + [6 - 6]$

$= 25 + 0 = 25$

4

[a] $(x + y)^{-1} = \left(\frac{1}{3} + \frac{1}{6}\right)^{-1} = \left(\frac{6+3}{18}\right)^{-1}$

$= \left(\frac{9}{18}\right)^{-1} = \left(\frac{1}{2}\right)^{-1} = 2$

[b] Let the number be : x

$\therefore x + 3x = 24 \quad \therefore 4x = 24$

$\therefore x = 6$

$\therefore$ The number is 6

5

[a] $\frac{a^3 \times a^{-8}}{a^{-5}} = a^{3-8+5} = a^0 = 1$

[b] 1) The probability of getting the ball is blue $= \frac{6}{15} = \frac{2}{5}$

2) The probability of getting the ball is white or red $\frac{4+5}{15} = \frac{9}{15} = \frac{3}{5}$

8 El-Kalyoubia

1
1) c 2) c 3) b
4) c 5) b 6) b

2
1) $\frac{-16}{81}$ 2) $\frac{1}{36}$ 3) 8
4) -5 5) $\frac{2}{3}$

3

[a] $\left(\frac{-1}{3}\right)^2 + \sqrt{\frac{64}{81}} - \left(\frac{a}{b}\right)^0 = \frac{1}{9} + \frac{8}{9} - 1 = 0$

[b] $\left(\frac{y}{x}\right)^{-2} = \left[\left(\frac{-3}{4}\right) \div \left(\frac{-1}{2}\right)\right]^{-2}$

$= \left[\frac{-3}{4} \times \frac{-2}{1}\right]^{-2} = \left[\frac{3}{2}\right]^{-2} = \left[\frac{2}{3}\right]^2 = \frac{4}{9}$

4

1) $\because 3x+1=25$ $\therefore 3x=24$ $\therefore x=8$

$\therefore$ The S.S. $=\{8\}$

2) $\because 15+2x<1$ $\therefore 2x<-14$ $\therefore x<-7$

$\therefore$ The S.S. $=\{x : x \in \mathbb{Q}, x<-7\}$

5

[a] $\left(2 \times \sqrt{36}-2^4\right) \div 4=(2 \times 6-16) \div 4$

$=(12-16) \div 4=-4 \div 4=-1$

[b] 1) The probability of getting a prime even number $=\frac{1}{6}$

2) The probability of getting an odd number less than $4=\frac{2}{6}=\frac{1}{3}$

9 El-Sharkia

1 1) 1 2) 1 3) $a^2 \mid b \mid$ 4) 2.3×10^{-4} 5) 42

2 1) c 2) b 3) d 4) a 5) b 6) c

3

[a] $\because 2x+1=9$ $\therefore 2x=8$

$\therefore x=4$

$\therefore$ The S.S. $=\{4\}$

[b] $\left(\frac{-1}{3}\right)^2+\sqrt{\frac{64}{81}}+\left(\frac{3}{7}\right)^0=\frac{1}{9}+\frac{8}{9}+1=2$

4

[a] $\frac{3^6 \times 3^{-2}}{3^2}=3^{6-2-2}=3^2=9$

[b] $\frac{y}{x^2}=\left(\frac{3}{4}\right) \div\left(\frac{-1}{2}\right)^2=\frac{3}{4} \div \frac{1}{4}=\frac{3}{4} \times \frac{4}{1}=3$

5

[a] $\because 3x-2 \leq 7$ $\therefore 3x \leq 9$ $\therefore x \leq 3$

$\therefore$ The S.S. $=\{x : x \in \mathbb{Q}, x \leq 3\}$

[b] 1) The probability of the ball is white $=\frac{3}{14}$

2) The probability of the ball is not red $=\frac{5+3}{14}=\frac{8}{14}=\frac{4}{7}$

10 El-Monofia

1 1) c 2) d 3) c 4) d 5) c 6) d

2 1) 13 2) $\varnothing$ 3) 3 4) $\frac{2}{3}$ 5) zero

3

[a] 1) $\because 5x-2=8$ $\therefore 5x=10$ $\therefore x=2$

$\therefore$ The S.S. $=\{2\}$

2) $\because 2x+3>4$ $\therefore 2x>1$ $\therefore x>\frac{1}{2}$

$\therefore$ The S.S. $=\left\{x : x \in \mathbb{Q}, x>\frac{1}{2}\right\}$

[b] $2\left[\left(5^2+1\right)-\left(4^2-1\right)\right]=2[(25+1)-(16-1)]$

$=2[26-15]=2 \times 11=22$

4

[a] $\left(\frac{-2}{3}\right)^3 \times \sqrt{\frac{81}{64}} \times\left(\frac{1}{3}\right)^{\text{zero}}=\frac{-8}{27} \times \frac{9}{8} \times 1=\frac{-1}{3}$

[b] 1) The probability of the drawn ball is yellow $=\frac{4}{12}=\frac{1}{3}$

2) The probability of the drawn ball is not green $=\frac{3+4}{12}=\frac{7}{12}$

5

[a] $\frac{7^5 \times 7^{-2}}{7^3}=7^{5-2-3}=7^0=1$

[b] $\left(4x^2-y\right)^2=\left[4\left(\frac{1}{2}\right)^2-\left(\frac{1}{3}\right)\right]^2=\left[4 \times \frac{1}{4}-\frac{1}{3}\right]^2$

$=\left[1-\frac{1}{3}\right]^2=\left[\frac{3-1}{3}\right]^2=\left[\frac{2}{3}\right]^2=\frac{4}{9}$

11 El-Dakahlia

1 1) b 2) c 3) b 4) d 5) c 6) d

2 1) 3 2) $13 \mid K \mid$ 3) 144 4) Event 5) $\{5, 6\}$

3

[a] $(25ab+5a) \div 5a=5b+1$ at $a=2$, $b=-1$

$\therefore 5b+1=5(-1)+1=-5+1=-4$

[b] $\left(\frac{-49}{25}\right)^0 \times\left(\frac{-2}{7}\right)^2 \times \sqrt{12 \frac{1}{4}}=1 \times \frac{4}{49} \times \sqrt{\frac{49}{4}}$

$=1 \times \frac{4}{49} \times \frac{7}{2}=\frac{2}{7}$

4

[a] 1 $\because 2x+7<15 \quad \therefore 2x<8 \quad \therefore x<4$

$\therefore$ The S.S. $=\{x : x\in\mathbb{Q} , x<4\}$

2 $\because 6x+6=6 \quad \therefore 6x=0 \quad \therefore x=0$

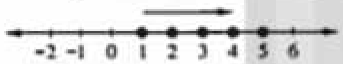
$\therefore$ The S.S. $=\{0\}$

[b] $\frac{(3)^{-6}\times(3)^{11}}{(3)^3}=3^{-6+11-3}=3^2=9$

5

[a] $\because 5x-2\geq 3 \quad \therefore 5x\geq 5 \quad \therefore x\geq 1$

$\therefore$ The S.S. $=\{1 , 2 , 3 , 4 , 5 , ...\}$



[b] 1 The probability of getting a black ball $=\frac{0}{15}=0$

2 The probability of getting a red ball $=\frac{5}{15}=\frac{1}{3}$

12 El-Ismailia

1

1 b   2 c   3 a
4 d   5 b   6 a

2

1 30   2 $15y^4$ 3 $\frac{5x^2}{y^2}$
4 11   5 4

3

[a] $\left(\frac{-1}{3}\right)^2+\sqrt{\frac{64}{81}}-\left(\frac{3}{7}\right)^0=\frac{1}{9}+\frac{8}{9}-1=0$

[b] $\frac{a^7\times a^5}{a^4\times a^6}=a^{7+5-4-6}=a^2$

at $a=-3 \quad \therefore a^2=(-3)^2=9$

4

[a] $\because 3x+4<25 \quad \therefore 3x<21 \quad \therefore x<7$

$\therefore$ The S.S. $=\{x : x\in\mathbb{Q} , x<7\}$

[b] $x^2y^2+z=\left(\frac{1}{2}\right)^2\times\left(\frac{-2}{3}\right)^2+\left(\frac{3}{4}\right)=\frac{1}{4}\times\frac{4}{9}\times\frac{4}{3}=\frac{4}{27}$

5

[a] 1 The probability of getting an even number $=\frac{4}{8}=\frac{1}{2}$

2 The probability of getting a prime number $=\frac{4}{8}=\frac{1}{2}$

3 The probability of getting a number more than 7 $=\frac{1}{8}$

[b] $\because 6x-8=22 \quad \therefore 6x=30 \quad \therefore x=5$

$\therefore$ The S.S. $=\{5\}$

13 Damietta

1

1 b   2 a   3 b
4 c   5 c   6 b

2

1 1   2 5.3×10^{-5} 3 $\frac{5}{3}$
4 $\frac{4}{9}$ 5 13

3

[a] $\left(\frac{-5}{3}\right)^2\times\left(\frac{-4}{9}\right)^0\times\sqrt{3\frac{6}{25}}=\frac{25}{9}\times1\times\sqrt{\frac{81}{25}}$

$=\frac{25}{9}\times1\times\frac{9}{5}=5$

[b] 1 $\because 3x+1>25 \quad \therefore 3x>24$

$\therefore x>8$

$\therefore$ The S.S. $=\{x : x\in\mathbb{Q} , x>8\}$

2 $\because 5x+8=15-2x$

$\therefore 5x+2x=15-8$

$\therefore 7x=7 \quad \therefore x=1$

$\therefore$ The S.S. $=\{1\}$

4

[a] $\frac{x^7\times x^9}{x^6\times x^8}=x^{7+9-6-8}=x^2$

at $x=-3 \quad \therefore x^2=(-3)^2=9$

[b] Let the numbers be : $x , x+2 , x+4$

$\therefore x+x+2+x+4=60$

$\therefore 3x+6=60 \quad \therefore 3x=54$

$\therefore x=18$

$\therefore$ The numbers are : 18 , 20 , 22

5

[a] $\sqrt{x^2+y^2}=\sqrt{3^2+(-4)^2}=\sqrt{9+16}=\sqrt{25}=5$

[b] 1 The probability of getting a blue ball $=\frac{6}{15}=\frac{2}{5}$

2 The probability of getting a white or red ball $=\frac{4+5}{15}=\frac{9}{15}=\frac{3}{5}$

3 The probability of getting a green ball $=\frac{0}{15}=0$

14 El-Fayoum

1 1 d 2 a 3 b 4 b 5 c 6 b

2 1 25 2 5 3 $\frac{3}{2}$ 4 $\frac{7}{16}$, $\frac{9}{32}$ 5 4.5×10^6

3

[a] 1 $\frac{10^{-3} \times 10^6}{10^2} = 10^{-3+6-2} = 10$

2 $\frac{\left(\frac{1}{2}\right)^2 \times \left(\frac{1}{2}\right)^{-5}}{\frac{1}{2}} = \left(\frac{1}{2}\right)^{2-5-1} = \left(\frac{1}{2}\right)^{-4} = (2)^4 = 16$

[b] 1 $\because 8 + 2x = 14$ $\therefore 2x = 6$
$\therefore x = 3$ $\therefore$ The S.S. $= \{3\}$

2 $\because 3x - 1 = -10$ $\therefore 3x = -9$
$\therefore x = -3$
$\therefore$ The S.S. $= \{-3\}$

4

[a] 1 $\because 2(x - 3) = -x + 12$
$\therefore 2x - 6 = -x + 12$
$\therefore 2x + x = 12 + 6$ $\therefore 3x = 18$
$\therefore x = 6$ $\therefore$ The S.S. $= \{6\}$

2 $\because 5x - 1 = 29$ $\therefore 5x = 30$
$\therefore x = 6$ $\therefore$ The S.S. $= \{6\}$

[b] 1 $\frac{9 - b}{a^3} = \frac{9 - 5}{2^3} = \frac{4}{8} = \frac{1}{2}$

2 $\frac{6^2}{a + 1} = \frac{6^2}{2 + 1} = \frac{36}{3} = 12$

5

[a] 1 $\because 3x - 4 \geq -10$ $\therefore 3x \geq -6$ $\therefore x \geq -2$
$\therefore$ The S.S. $= \{-2, -1, 0, 1, 2, ...\}$

2 $\because x + 2 \geq 2$ $\therefore x \geq 2 - 2$ $\therefore x \geq 0$
$\therefore$ The S.S. $= \{0, 1, 2, 3, ...\}$

[b] 1 The probability of the drawn card carries an odd prime number $= \frac{5}{15} = \frac{1}{3}$

2 The probability of the drawn card carries a number less than or equal to $1 = \frac{1}{15}$

3 The probability of the drawn card carries a number more than $15 = \frac{0}{15} = 0$

4 The probability of the drawn card carries the number $15 = \frac{1}{15}$

15 Qena

1 1 b 2 a 3 b 4 b 5 c 6 b

2 1 $x + 5$ 2 $\frac{4}{9}$ 3 zero 4 2 5 39

3

[a] $\because \frac{3}{5}x + 4 < 28$ $\therefore \frac{3}{5}x < 24$
$\therefore 3x < 120$ $\therefore x < 40$
$\therefore$ The S.S. $= \{x : x \in Q , x < 40\}$

[b] $a^3 b^3 = \left(\frac{-2}{3}\right)^3 \times \left(\frac{3}{4}\right)^3 = \frac{-8}{27} \times \frac{27}{64} = \frac{-1}{8}$

4

[a] $\left(\frac{4}{9}\right)^{-2} \times \left(\frac{4}{9}\right)^6 = \left(\frac{4}{9}\right)^{-2+6} = \left(\frac{4}{9}\right)^4 = \frac{256}{6561}$

[b] Let the numbers be : x , $x + 2$, $x + 4$
$\therefore x + x + 2 + x + 4 = 156$
$\therefore 3x + 6 = 156$ $\therefore 3x = 150$
$\therefore x = 50$
$\therefore$ The numbers are : 50 , 52 , 54

5

[a] $3^{x+y} = 3^x \times 3^y = 7 \times 5 = 35$

[b] 1 The probability of appearance of an even number $= \frac{3}{6} = \frac{1}{2}$

2 The probability of appearance of a number greater than $3 = \frac{3}{6} = \frac{1}{2}$

3 The probability of appearance of the number $5 = \frac{1}{6}$